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Therapeutic Gazette.

Whole Series, Vol. XIX. | DETROIT, MICH., PHILADELPHIA, PA., | September 16, 1895. | Third Series, Vol. XI. No. 9.

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Original Communications.

ANHALONIUM LEWINII (*MESCAL BUTTONS*).

A STUDY OF THE DRUG, WITH ESPECIAL REFERENCE TO ITS PHYSIOLOGICAL ACTION UPON MAN, WITH REPORT OF EXPERIMENTS.

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THE attention of the medical world was first directed to the Anhalonium Lewinii by Lewin and Henning,* who, in 1888, published the results of their observations upon the drug. Since that time Lewin has made the drug the subject of further study. But, besides this and some discussion as to the place in botanical classification which the Anhalonium Lewinii should occupy, little attention has been given to the drug by investigators, owing, in all probability, to the difficulty with which specimens are obtained.

In the autumn of 1894 the United States Bureau of Ethnology received, through Mr. James Mooney, agent among the Indians, an abundant supply of the mescal buttons. The investigation of its physiological effects having been intrusted to the present writers, we have embodied the results of our observations in this paper.

The Anhalonium Lewinii being a drug with which few are familiar, a brief description of it

* THERAPEUTIC GAZETTE, 1888, p. 232.

may not be out of place. Without entering into a minute botanical description,* it may be said that the plant from which the buttons are derived belongs to the natural order of *Cacteæ* (cacti), of which order there are many species, the Anhalonium Lewinii being the one about which least is known at the present time. It inhabits the valley of the Rio Grande in Mexico, growing in barren and even rocky soil, and often in places which can be reached with difficulty by those who gather it. It reaches a height of about one-half inch above the surface of the ground. The body (Fig. I., 1, is comparatively thick, and is surmounted by a top, which is composed mainly of the blunt leaves of the plant. In the centre of this top is a tuft, about one-half to one inch in diameter, composed of yellowish-white filaments or hairs. These *tops*, when dried, constitute the mescal buttons, the commercial form of Anhalonium Lewinii.

The mescal buttons (Fig. II.) are of a brown color, circular, about one to one and a half inches in diameter, and about one-fourth of an inch in thickness. The edge curls upward, giving to the under surface, *a*, a convex appearance. In the centre of the upper surface, *b*, is a tuft composed of the yellowish-white hairs before mentioned, and matted down so as just about to reach the level of the upturned edge.

The button is somewhat brittle and hard, and can be pulverized in a mortar with difficulty. In the mouth, however, under the action of the saliva, it swells, and rapidly becomes soft, the consistency which it acquires giving somewhat the sensation imparted by slippery elm. The taste is decidedly disagreeable and nauseous, and very bitter, with a persistent after-taste. A marked sensation of stinging or tingling is produced in the fauces, which remains for a considerable time after the drug has been swallowed. The powdered drug

FIG. I.

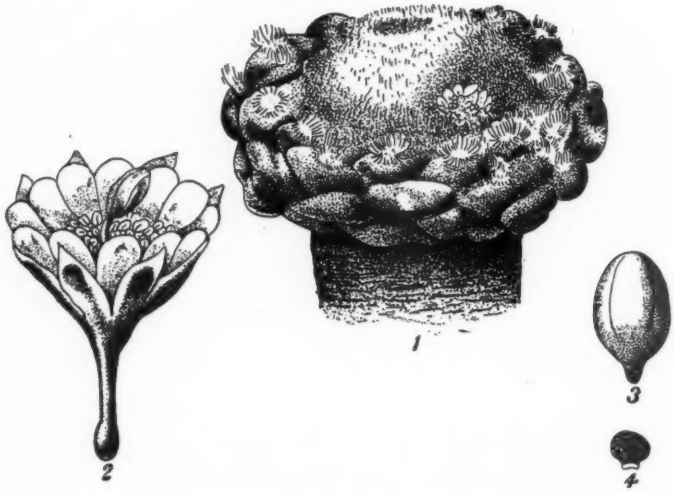

FIG. II.

* See Henning, THERAPEUTIC GAZETTE, 1888.

is odorless when dry, but acquires a nauseous odor upon being moistened.

The chemical constituents of Anhalonium Lewinii, so far as known at the present time, are most interesting.* In 1888, Dr. Lewin † obtained from the drug an alkaloidal substance which he tentatively named anhalonin. This substance is a brown, syrupy liquid, having an intensely alkaline reaction. It was found to be slightly soluble in water, but readily soluble with the aid of an acid. When sulphuric acid was used as a solvent, the crystallized sulphate of an alkaloid separated in the form of colorless, needle-shaped crystals.

Heffter,‡ by careful analysis of this syrupy substance, obtained three alkaloids. The first, probably the same one crystallized out by Lewin (*ante*), and more properly called anhalonin, formed brilliant, colorless, needle-shaped crystals. To this Lewin has ascribed the formula $C_{12}H_{15}NO_3$.

The second formed non-lustrous, white rhombic tables.

The third was an amorphous and very poisonous alkaloid left behind in the mother liquor.

The chemical analysis now being made in the laboratory of the United States Department of Agriculture by Mr. E. E. Ewell, under the direction of Dr. H. W. Wiley, promises, when completed, to throw great light upon the chemistry of the mescal. This investigation likewise indicates the presence of at least three alkaloids. Besides these, at least two resinous bodies are also present, as well as a wax-like body, which latter is insoluble in cold alcohol, but is soluble in hot alcohol, petroleum ether, chloroform, etc.

The resinous bodies are dark brown in color and very thick, and have the taste and odor of the moistened mescal.

Which of these constituents is the true active principle of the drug cannot be stated until the chemical analysis is complete, and experiments have been carefully made with each of the constituents found, to determine its individual action and identity. It is the opinion at the Agricultural Department that the activity of the drug is due mainly to the resinous bodies and not so much to the alkaloidal constituents.

A marked peculiarity of the mescal is that about one-half of its ash is potassium chloride, —a proportion greater than that found in any other plant.

Physiological Action.—In connection with the physiological action of the mescal, its use by the Indians is of great interest. The Kiowa Indians formerly for generations occupied the valley of the Rio Grande, and became addicted to the use of the mescal buttons, which, as already stated, are native in that region, and they adopted its use as a regular part of their religious ceremonies. Later on they migrated from the Rio Grande, and finally took up their abode on the Kiowa Reservation in Indian Territory, which they now occupy. They have continued the use of the mescal button in their ceremonies, however, the demand being supplied by traders, who obtain it from the valley of the Rio Grande. Complaint being made to the government authorities at Washington by missionaries and others, the buying and selling of the drug was rendered unlawful. Nevertheless, the use of the mesca has persisted among the Kiowas to the present time.

The religious ceremonies mentioned usually take place on Saturday night. The male Indians, having obtained their supply of the buttons, seat themselves in a circle around a large camp-fire, which is kept burning brightly. A button, after having been freed from the tuft of hairs, is put into the mouth, and, after it is thoroughly softened, it is ejected into the palm of the hand, rolled into a bolus, and then swallowed. In this way ten or twelve of the buttons, as a rule, are taken at intervals between sundown and 3 A.M. Throughout the ceremony there is no dancing or singing, but the camp-fire is kept burning brightly, and a continual beating upon drums is kept up by attendants. The Indians sit quietly in a state of reverie, the intoxication of the drug showing itself in the visions of color and other manifestations, which will be described later. They sit in this manner from sundown to noon of the next day. As the effect wears off, they get up and go about their work, it is claimed, without the slightest depression or unpleasant after-effect. Upon the day following the ceremony they carefully abstain from the use of common salt with their food; this, it seems, for a religious reason, and not because of any incompatibility of salt with the drug or its effects. This description of the manner in which the mescal buttons are used by the Indians was given to the writers by Mr. Mooney, who has several times partaken of the drug with them.

It will be noticed in the following experiments that only three to seven of the buttons

* For the following account of our present knowledge of the chemistry of Anhalonium Lewinii I am indebted to Mr. E. E. Ewell, Bureau of Chemistry, United States Department of Agriculture.

† *Archiv für Experimentelle Pathologie und Pharmakologie*, 1888, xxiv. 401.

‡ Dr. A. Heffter, *Archiv für Experimentelle Pathologie und Pharmakologie*, Band xxxiv., Heft 1 u. 2.

were necessary to produce a marked effect, whereas the Indians take ten or twelve at one ceremony. This difference in susceptibility is undoubtedly due to the tolerance for the drug which has arisen in the Indian as a result both of his own habitual use and of the hereditary influence received by him from his progenitors.

Experiment 1.—Chemist; age, twenty-seven; height, five feet five inches; weight, one hundred and twenty-three pounds.

This experiment is of value only as showing the remarkable effect of the drug upon the brain, especially the centres of vision. No record of the effect upon the bodily functions was taken.

About four and a half buttons were taken, weighing, in all, between fourteen and fifteen grammes. Between 9 and 11 P.M. three buttons were slowly chewed and swallowed. A slight nausea was noticed after the second button had been swallowed, which increased in intensity until midnight and then gradually disappeared. The following account is from the report of the subject of the experiment, taken partly from notes made by himself at the time:

"At eleven o'clock I retired to my room to prepare for bed. Before doing so, however, I noticed that on closing my eyes I could see all sorts of designs in brilliant and ever-changing colors. These visions were so pleasing that I at once decided to continue the experiment, and I placed the fourth and a part of the fifth button in my mouth. Then followed a train of delightful visions such as no human being ever enjoyed under normal conditions. My mind was perfectly clear and active; the power to concentrate my thoughts upon any desired subject was only slightly lessened; seated at my desk, I could write of my sensations and experiences; stretched out upon the bed, with closed eyes, an ever-changing panorama of infinite beauty and grandeur, of infinite variety of color and form, hurried before me. By concentrating my thoughts upon various subjects successively, the nature of the visions could be determined and considerable control exercised over the time that they remained in view. Perhaps the most pleasing of all the visions of the night were brought to view by my voluntarily thinking intently of the production of Kiralfy's 'America,' as given two years ago. Indeed, during the passage of this and many other visions before my enraptured mental gaze, my pleasure so far passed the more ordinary realms of delight as to bring me to that high ecstatic state in which our exclamations of enjoyment become involuntary. I truly thought that I had experienced great pleasure upon many previous occasions, but the experience of this night was one quite unique in this regard in the history of a lifetime. The tendency of every feature of the experience to prove a source of pleasure was quite remarkable. Efforts to fix the attention upon some subject which should give rise to unpleasant visions resulted in the appearance of myriads of horrible crawling monsters and seas of grewsome forms of human face and body which would cause the ordinarily sensitive human being to shudder. But under the influence of the mescal it merely added another item to the list of the inexpressible delights of my remarkable night's experience."

Besides the visions mentioned, the loss of conception of time and space was a marked feature of the experiment.

About 4 A.M. the effects of the drug began to pass off, and had entirely disappeared by evening. During the day slight depression was experienced with inability to sleep until 9 P.M.

Careful chemical examination of the urine passed during the experiment disclosed the presence of a considerable quantity of at least one of the alkaloids of the drug.

Experiment 2.—Reporter; age, twenty-four; height, five feet eleven inches; weight, one hundred and fifty-eight pounds. In preparation for this experiment the buttons were ground to a coarse powder, and were administered in wafer-paper, the subject having previously found it impossible to chew and swallow them after the manner of the Indians without emesis.

At the beginning of the experiment the pulse was found to be 108 and the other bodily functions normal. The height of the pulse was due to the unfortunate fact that he had taken a glass of whiskey with his supper, a short time before.

Between 11.30 P.M. and 2.30 A.M. seven buttons were taken at regular intervals. Observations taken at hourly intervals showed that the condition of the skin, respiration, and temperature remained normal throughout the experiment. The pupil began to dilate at 1.30 A.M. and remained dilated until the evening of the following day. The pulse-rate gradually fell from 108 at 11.30 P.M. to 71 at 2.30 A.M., and then rose to 81 at 3 A.M., and continued at this rate and of good quality throughout the experiment. A sedative effect upon the muscular system became apparent at 2.30 A.M., the subject feeling decidedly lazy and perfectly contented.

At 3 A.M. began the period of intoxication and full effects of the drug. During this time, which lasted until about 7 A.M., he reclined lazily in his chair, disinclined to make the slightest movement. His eyelids drooped, and he scarcely moved his lips and jaw in articulating. His pupils were dilated. There was no exhilaration, but a tendency to reverie. He noticed a fine tremor of the extremities and a rumbling in the ears. He lost conception of time, the intervals between his words and sentences seeming inordinately long.

Besides these constant symptoms, which persisted during the experiment, another set came on in paroxysms or periods, which would last a varying length of time,—from one to five or six minutes or more. The intervals between these periods also varied in length very much. During each paroxysm of this sort he had visions of ever-changing and gorgeously colored objects, forms, and designs in motion. "The first sensations that followed my taking the drug came upon thoughtlessly closing my eyes. Instantly there sprang into the field of view a host of little tubes of shining light, down which green and red balls the size of peas were constantly rolling. The tubes of light bent themselves into the shape of letters, but they would spell nothing, and, slowly curving themselves into grotesque shapes, began to revolve rapidly, the green and red balls going in the opposite direction with even greater velocity. All the field of view between these silent wheels was filled in with a shifting mass of green. The colors were wonderful. They were the colors of the spectrum intensified as though bathed in the fiercest sunlight. No words can give an idea of their intensity or of their ceaseless, persistent motion. The figures constantly changed in form and color, but always remained a series of fantastic curves, revolving rapidly back and forth upon their own axis. The forms changed through rich arabesques, Syrian carpet patterns, and plain geometric figures, and with each new form came a new flush of color, every shade appearing, from pure white to deepest purple. When the eyes opened and the light was turned up, the visions faded like stars going out in daylight, and the room, tables, chairs, and all surroundings came back into real existence and within reach of the hands."

During these paroxysms he also experienced difficulty in enunciation, and was frequently at loss for a word with which to express his thoughts. He also seemed to have a double personality,—to be outside of himself looking at himself. At such times, also, a marked symptom was a feeling of great distrust and resentment which he exhibited towards those who were making the experiment with him. He realized his "mental inferiority," and firmly believed that we were secretly laughing at his condition. He believed that we intended to kill him, and for this reason he refused to take the eighth button at 3.30 A.M. He has since stated that the drug made him perfectly "insane" in this particular, and that he would have attempted violence had it not seemed to him too much trouble in his lazy and depressed condition. Between the paroxysms he had no such feeling, and apologized for the feeling which he realized he could not help.

At about 7 A.M. the paroxysms and all symptoms began to diminish in intensity, and had entirely disappeared at 7 P.M. During the day he was troubled with some disturbance of vision, occipital headache, sense of dual personality, and tendency to recurrence of the visions and "lapses of mind;" but he managed to do a day's work.

Experiment 3.—Subject same as in the last experiment. Between 11 P.M. and 1.30 A.M. three and a half buttons were taken in wafer-paper.

Observations at regular intervals showed that the condition of the skin, respiration, and temperature remained normal throughout the experiment. The pulse-rate declined from 82 at 8 A.M. to 72 at 2.30 P.M., and then rose gradually to 78 at 3.30 P.M., and continued at this rate, with slight variations, throughout the experiment. The pupil began to dilate at 2.10 P.M., and remained dilated until about noon of the following day. Marked sedative and quieting effect upon the muscular system appeared at 2 P.M., preceded by a period of "nervousness." The same disinclination to muscular effort was noted as in the last experiment, though not so marked; also the fine tremor of the extremities. In this, as well as in the last experiment, a feeling of discomfort and fulness in the stomach followed the ingestion of the drug.

At 4 P.M. a faint color display appeared upon closing the eyes. This effect gradually deepened into visions, differing from those already described only in the fact that they were much less intense. They could be seen at intervals, upon closing the eyes, until about noon of the day following, passing off with the other effects of the drug. No disagreeable symptoms appeared, as in the last experiment,—no dual personality, resentment, difficulty in thought and enunciation, etc. He was able to work with extraordinary facility and ease before the effect of the drug passed off, and regards it, in

the dose given, as a remarkable brain stimulant. No after-effects were noticed.

Experiment 4.—Student; age, twenty-six; height, six feet two and a half inches; weight, one hundred and fifty-eight pounds. Between 6 and 10.30 P.M. three and a half buttons were slowly chewed and swallowed. The pulse-rate fell from 90 at 6 P.M. to 80 at 7 P.M., 72 at 8 P.M., 68 at 9 P.M., 63 at 10 P.M., and then rose to 72 at 11 P.M., 80 at 12 M., and remained at 80, with slight variations, throughout the experiment. The pupil became dilated after the third button, and remained dilated until evening of the following day. A fine tremor of the extremities was noted at 11 P.M. A feeling of perfect comfort and satisfaction appeared after the second button at 9 P.M. This feeling was accompanied by disinclination to make any muscular effort, and the effect deepened into a most marked depression of the muscular system at about 11 P.M., which became the most prominent feature of the experiment. He became unable to walk without assistance, and could with difficulty maintain himself in the sitting posture. All of his voluntary muscles took part in this depression, and were limp and flaccid. He did not move his lips in talking, and at times was unable to speak above a whisper. Like the subject of Experiment II., he "lapsed away" into paroxysms, at which times the depression was greater and the visions and all other symptoms more intense. In the intervals between them he was more nearly himself. These paroxysms could be precipitated at any time by turning the light low.

His condition began to improve at 3 A.M., though the depression did not entirely disappear until 1 P.M. of the following day.

The pulse during the period of depression was of good quality, and remained at 80, except after exertion.

The respiration during the paroxysms was more shallow and rapid than normal, and interrupted occasionally by a very deep breath, at which he expressed the greatest satisfaction.

Loss of conception of time was a marked feature of the experiment. All objects also seemed small and removed to a great distance, so that he needed assistance to bring a glass of water to his lips.

Visions appeared upon closing his eyes at about the time of commencement of the depression, and lasted until about 3 A.M., when they began to diminish in intensity, and finally disappeared at 1 P.M. on the following day. The visions were not brilliant displays of color, but the appearance in rapid succession of variously colored familiar objects, like barrels, pumps, etc., and he expressed no admiration for them. The visions were subject to suggestion. Upon being asked if he did not see this or that object, it immediately appeared before his imagination. Thus, having suggested a Sunday-school, he described accurately the scholars, the movements of the leader, the song they were singing, and even sang the song with them before us. He fully realized that the vision was an effect of the drug and not a reality.

His intellect was fairly clear, there being only slight slowness and confusion of thought at times. He had a sense of mental inferiority, and also felt that he was sinking all the time, and that his life was leaving him, and expressed anxiety as to his condition. His sense of smell was so far blunted that he could not recognize cinnamon-water, or tell whether or not tincture of asafœtida was a perfume. He could not recognize cinnamon-water by the sense of taste, but thought it different from pure water in some way. During the experiment there was frequent urination, accompanied by a burning sensation in the urethra. Sleep was found impossible during the day following.

Throughout the experiment he complained of an aching sensation in the occipital region and eyes. This ache and "tired feeling" persisted in the occipital region for three days, being so severe on the second day that he could not attend to his work.

Experiment 5.—Clerk; age, twenty-one; height, five feet ten inches; weight, one hundred and forty-eight pounds. At the commencement of the experiment the subject's condition was found normal, with the exception of the pulse, which was 96, the rapidity being in all probability due to excitement. Between 6 and 10.30 P.M. three and a half buttons were slowly chewed and swallowed.

The respiration and temperature were unaffected by the drug. The pulse rate gradually declined from 96 at 6 P.M. to 66 at 9 P.M., and then rose gradually to 78 at 11 P.M., and continued at that rate throughout the experiment. The pupils became dilated after the second button, and remained dilated until the evening of the following day. A fine tremor of the extremities was noted, as in the last experiment. The sedative and quieting effect of the drug appeared after the second button, the subject reclining lazily in his chair, perfectly contented, and unwilling to make any muscular effort. The effect upon the brain showed itself in this case not in the production of visions,—only a few visions of color being

seen,—but in a remarkable mental exhilaration and stimulation, which lasted until 9 A.M. He was perfectly happy and experienced a sense of superiority and well-being. He wrote continuously an account of his sensations, but experienced difficulty in writing down his thoughts, so fast did they follow one another.

He lost all conception of time. There was frequent urination, accompanied by a burning sensation in the urethra. Some anæsthesia of the surface of the body was noted. Sleep was found impossible during the following day.

The last two experiments present a remarkable contrast in the susceptibility of the two persons to the effects of the drug, both taking the same amount, at the same time, and under the same conditions.

Experiment 6.—Chemist; age, twenty-nine; height, five feet ten and a half inches; weight, one hundred and fifty-five pounds. Between 10 A.M. and 1 P.M. four buttons were taken, weighing, in all, 11.52 grammes. At the commencement of the experiment the subject's condition was found normal; pulse, 90. The respiration and temperature remained normal.

The pulse-rate declined from 90 at 10 A.M. to 80 at 11 A.M., 68 at 11.30 A.M., 60 at 12 M., and remained at 60 until 3.30 P.M., when it rose to 65, 70 at 4 P.M., and continued at this rate. At 12.15 P.M. dilatation of the pupil was noted, which continued throughout the experiment. A sedative effect upon the muscular system became apparent at 11 A.M., after the second button. This lasted until the active effect of the drug passed off, and was a pleasant feature, and at no time approached actual depression. Slight uneasiness in the stomach was present a part of the time. Visions appeared upon closing the eyes at 1.30 P.M., in the form of tapestry designs in black and white. From this time until 3 A.M. on the following morning, whenever the eyes were closed, a panorama of beautifully colored objects, designs, scenes, dances, marches, etc., passed constantly before his imagination. The visions were at times under the control of the will. The effect of music upon them was noted, and it was found to have no effect, except so far as the regular marking of the time was concerned. He preferred drumming to regular time upon a table to the music of a piano. The effect of this was to make the men, women, and objects dance, or otherwise keep perfect time to the drumming, and greatly intensified the pleasant effect of the drug. It will be remembered that a constant beating upon drums is a regular part of the taking of the mescal buttons by the Indians.

His reason and will were absolutely unaffected.

Partial anæsthesia of the surface of the body was noted at 4 P.M. All objects seemed removed to a distance, though this was less marked than in any of the preceding experiments.

The effects of the drug wore off gradually, commencing at 5 P.M., although visions could be seen until 3 A.M., and sleep was found impossible until 5 A.M. No depression was experienced the next day.

The quantity of the urine and its constituents were not altered by the drug.

The production of visions is the most interesting of the physiological effects of the Anhalonium Lewinii, as shown by these experiments. The visions ranged from ill-defined flashes of color to most beautiful figures, forms, landscapes, dances,—in fact, there seemed to be absolutely no limit to the variety of visions which the drug could produce. They could in but few cases be seen with the eyes open, but upon closing them an ever-changing panorama appeared. The predominating feature of the visions was the color effects, although the figures, forms, etc., were in themselves sources of pleasure and admiration. Drumming, or otherwise marking regular time, enhanced the beauty and variety of the objects seen. In two cases the visions were under the control of the will, and in one case they were subject to the suggestion of others. The amount of pleasure derived from the drug seemed to vary inversely with the amount of muscular depression present. The effect of the drug in the production of visions is in all probability due to the stimulation of the centres of vision in the brain. The persistent ache and feeling of exhaustion in the occipital region, which was present for several days after Experiment 4, is of interest in this connection.

In some cases no effect whatever was produced upon the reason or will of the individual. In others there was some slowness of thought and loss of power of expression, and in Experiment 2 a marked delusion. Compared with other intoxicants, however, the effect upon the mind is extremely slight.

Dilatation of the pupil was well marked in every case, and persisted for from twelve to twenty-four hours after the drug was taken. The dilatation was accompanied by a slight loss of the power of accommodation and consequent disturbance of vision.

More or less depression of the muscular sys-

tem existed in every case, and this was the first effect noticed after the drug was taken. It ranged from a feeling of lazy contentment to marked muscular depression. Susceptibility to this effect varied widely. Whether the sedative action is caused by depression of the nerve-centres, peripheral nerves, or their nerve-endings, or of the muscular fibres themselves, we are at present unable to state; but from concomitant nervous effects we are inclined to the belief that it is due to depression of the nervous system and not of the muscular fibres themselves.

Partial anæsthesia of the skin was present in three of the cases, appearing when the effects of the drug began to wear off.

The heart action is at first rendered more slow and somewhat weaker in quality. This is followed by a rise to the normal in quality and rapidity, which continues during the period of greatest activity of the drug. In the cases in which the muscular depression was greatest, slight, if any, depression of the heart was present.

The respiration was unaffected in all cases except one. In this it seemed to partake slightly of the general muscular depression.

Upon the stomach the drug produced an effect which varied from a feeling of uneasiness and fulness at intervals to nausea and vomiting.

Inability to sleep for at least twelve hours after the effects of the drug commenced to pass off was a marked effect.

Loss of the sense of time existed in all cases.

No constant effect upon the bowels, skin, temperature, and the amount of secretion of the various glands of the body was found.

The only record of the taking of Anhalonium Lewinii for experimental purposes which we have been able to find is that of Briggs.* He took "a third of a specimen," and the symptoms produced were the following: in fifteen minutes the pulse rose from 60 to 70. In thirty minutes there was fulness of the head, pulse 90, respiration 26. The sense of fulness increased, and was followed by a headache and swimming in the head. Suddenly the pulse shot up to 160, and the respiration increased so that he could with difficulty get sufficient breath to keep himself alive. He thought he was about to die, and became unconscious. In six to eight hours his pulse and respiration went down again to the normal. Great depression existed for twelve hours.

* Lewin, *Archiv für Experimentelle Pathologie und Pharmakologie*, Band xxxiv., Heft 5 u. 6.

The symptoms produced in this experiment are so widely different from those which we have obtained from administration of the drug that we cannot believe that the drug taken by Briggs was the same one which we have now under consideration.

Lewin,† in experiments upon animals, found that in them the drug produced an acute muscular spasm of varying intensity, with increased reflexes, its action in this particular much resembling strychnine or brucine. No such effect was present, however, in our experiments upon man. Whether or not it would be produced by much larger doses is, of course, a matter of conjecture. In some animals, also, a quickened respiration was noted, which effect was present in our experiments only in one case, and in the presence of great general muscular depression. In animals, also, the heart remained unaffected, whereas, in man, we found a primary slowing of the heart action. In both animals and man more or less tendency to nausea and vomiting existed in most cases.

The physiological action of Anhalonium Lewinii upon man cannot be said to be identical with that of any other known drug. Its effects resemble those of certain drugs in some of the symptoms produced, but differ widely from them in others. Cannabis indica produces visions, with dilated pupils, and with slight effect upon the circulation. In these particulars its action is similar to Anhalonium Lewinii. But cannabis indica is an hypnotic, and the delirium and hallucinations are in most cases followed by sleep. Anhalonium Lewinii, on the other hand, tends to produce wakefulness in every case. The Indians do not sleep for twenty-four hours after the commencement of their ceremony, and in our experiments sleep was found to be impossible for about the same length of time.

In this tendency to produce wakefulness it resembles cocaine. The visions produced by cannabis indica "are generally of a gay character, producing much merriment, accompanied by a great inclination to muscular movement."‡ The visions of Anhalonium Lewinii provoked wonder and admiration, but no merriment, and there was present disinclination to make any muscular effort. Other marked differences exist, which will become evident to any one comparing the action of the two drugs.

Of the other drugs to whose action Anha-

† *Archiv für Experimentelle Pathologie und Pharmakologie*, Band xxxiv., Heft 5 u. 6.

‡ Brunton, "Pharmacology, Therapeutics, and Materia Medica," p. 1026.

lonium Lewinii may seem to bear a faint resemblance,—cocaine, belladonna, strychnine,—the difference in action present is so great as to render it very improbable that any of them are active principles of the drug. Whether one or more of these substances or their alkaloids do not exist in the Anhalonium Lewinii cannot be stated until the chemical analysis is complete and experiments have been conducted to determine the identity of the principles isolated.

In conclusion, we would say that Anhalonium Lewinii (mescal buttons) must not be confounded with the intoxicating drink, "mescal," used by the Mexicans and others. This drink is the fermented juice of one or more of the species of *Agave*.

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THE TREATMENT OF ACUTE URETHRITIS IN THE MALE.

BY H. M. CHRISTIAN, M.D.,
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BEFORE discussing the various means employed in the treatment of acute urethritis in the male, it seems to me to be a matter of great importance to have definitely fixed in our minds the proper means of determining when a case of clap is entirely cured. Unfortunately for the women of the community, in quite a large proportion of the cases, the patient generally takes upon himself the responsibility of answering this question. It is the experience of most physicians, I think, that the great majority of their patients, after receiving treatment up to a certain point, pass out of their hands, entirely satisfied in their own minds that they are really cured. I cannot help but consider that the medical profession itself has been in great part responsible for this state of affairs.

With perhaps rather vague and indefinite ideas in our own minds as to just when a case could be truly said to be cured, we have been careless or indifferent about instructing our patients with gonorrhœa as to the importance of not taking upon themselves the responsibility of deciding this question and impressing upon their minds the value of certain tests to be applied before a cure could positively be pronounced.

The usual method employed in determining whether a case of clap is cured or not consists in the examination of the meatus. Where there is no visible discharge at the meatus, and no history of the lips of the meatus being glued together by the morning drop, the case is nine times out of ten pronounced cured. But the mere absence of discharge at the meatus by no means proves the correctness of this assertion.

There may be present a posterior urethritis, the pus from which, prevented by the action of the "compressor urethræ" from entering the anterior urethra, would enter the bladder and become mixed with the urine. Under such conditions no discharge whatever would appear at the meatus.

The key to this most important question of determining when a case of acute urethritis is cured lies in the examination of the urine.

After treatment has been carried to the point at which there is no more discharge appearing at the meatus, repeated examinations of the urine should be made.

The patient should be instructed at the outset of his treatment that he is not to consider himself as cured until a number of examinations of his urine have been made, after the cessation of all local treatment.

If repeated examinations of the morning urine and the urine passed at the time of the patient's visit show an absence of shreds containing pus, which fall rapidly to the bottom of the glass, we can feel reasonably sure that the case is almost well.

If, on the other hand, clap shreds are found in either a clear or cloudy urine, the case is not cured, and further treatment must be pursued.

Another method of determining this question—much more scientific and exact—is the application to the urethra of a test irritating injection, either of bichloride of mercury or nitrate of silver. There results, of course, a simple urethritis, the pus from which is examined. If found to contain no gonococci, the case can be pronounced positively cured. If,

on the other hand, gonococci should be found in the discharge produced in this way, it is proof that the original specific urethritis has not been cured.

The one great objection to this highly scientific method is its impracticability. The average patient just about recovering from an attack of gonorrhœa is not very apt to give a ready consent to the induction of an acute simple urethritis in order to determine the question as to whether his acute specific urethritis has or has not been cured. In the majority of cases he will be content to let well enough alone, and the test with the urine is to all intents and purposes sufficient.

However, to married men, or to men about to be married, I would say that the matter should be explained to them, and the test irritating injection should by all means be employed.

In the treatment of acute urethritis four methods are presented for consideration:

1. The treatment by internal medication alone.

2. The generally adopted mode of treatment, which consists in the administration of alkaline diuretics internally in the early stages of the disease, followed later by the use of balsamic remedies and astringent injections.

3. Irrigation of the urethra.

4. Irrigation of the urethra, with internal administration of balsamics, followed later by the use of astringent injections.

First, treatment by internal medication alone, no local treatment being used. This is a method still employed by quite a number of physicians, and is the one most popular with prescribing druggists.

The remedies most commonly used are cubebs, copaiba, and sandal-wood oil. A very nauseous mixture popular in certain localities is the celebrated "Lafayette mixture," the principal ingredient of which is copaiba made into an emulsion by the addition of liquor potassæ.

Some four years ago, at the suggestion of Dr. Edward Martin, I conducted a series of experiments at the Genito-Urinary Dispensary of the University, on the treatment of urethritis by internal medication alone. The drugs used in these experiments were salol, copaiba, cubebs, and oil of sandal-wood.

Each drug was employed, to the exclusion of all other treatment, in twenty-five cases of acute urethritis, making the total number of cases treated one hundred.

The drug found to possess the most marked effect in lessening the discharge was sandal-wood oil. Next in order and following it very closely was balsam of copaiba. These remedies were administered in capsule form, from six to eight being taken daily. Their use was generally followed in a few days by a very decided lessening in the quantity of discharge. Salol and cubebs were each found to have little or no effect on the amount of discharge. In the one hundred cases treated in this manner only four developed epididymitis. After the first ten days the discharge became very thin and mucoid, and remained in the same condition at the end of four weeks' treatment. The inference would seem to be very plainly drawn that internal medication alone will not cure the disease.

The second plan mentioned is the one most widely employed by the medical profession today in the treatment of acute urethritis. In the main it consists in the administration of some alkaline diuretic or fever mixture in the early stage of the disease, followed by the use of some injection during the stationary period, together with the internal use of some one of the balsams. In the subsiding stage strong astringent injections are employed.

The drugs most generally used, and on the whole most valuable in the beginning, when the ardor urinæ is a most prominent and troublesome symptom, are bicarbonate of sodium, bicarbonate of potassium, citrate of potassium, and acetate of potassium. Of these, I consider the acetate of potassium the best. The use of Buffalo lithia water is of great service in keeping the urine alkaline. No local treatment is employed during the first week of the disease. At the end of this period, when the ardor urinæ is almost entirely gone and the discharge becomes very profuse, the patient is ordered an injection. Of the host of drugs mentioned as useful at this stage of the disease, two stand out prominently as the most valuable of all,—namely, subcarbonate of bismuth and hydrastis.

The formula which has been in use at the Genito-Urinary Dispensary of the University for the past ten years, and has stood the test of time better than any other, is as follows:

℞ Bismuth subcarb., ʒii;
Liquid hydrastis (colorless), fʒss;
Boro-glyceride, fʒii;
Aq. dest., q. s. ad ʒiv.

This injection is used by the patient three or four times daily after urinating. In addition he is given internally a capsule containing 5 drops each of the oil of sandal-wood and balsam of copaiba. From six to eight of these are given daily.

Under this treatment the discharge will in about one week become very scanty and much thinner. At this stage sulphate of zinc (2 to 3 grains to 1 ounce) can be added to the above injection. In the declining stage of the disease one of two formulas is to be very strongly recommended,—the injection of Ricord, popularly known as "injection brou," consisting of sulphate of zinc, acetate of lead, tincture of opium, tincture of catechu, and water; or an injection composed of sulphate of zinc, acetate of lead, hydrastis, and water.

In the final stage of the disease, when there is no longer any ardor urinæ or chordee, and simply a thin mucoid discharge, due to a relaxed condition of the urethral mucous membrane, an injection containing alum and sulphate of zinc, or alum and tannic acid, each 5 grains to 1 ounce, is probably all that is necessary to effect a cure.

The above constitutes a brief outline of the remedies that have proved of the greatest service in the treatment of acute urethritis. According to the plan now under consideration, no attempt has been made to enumerate or consider all the various drugs that have at one time or another been popular, or that are still in use by different physicians. Of the almost countless number of drugs recommended as being of value as injections, there are a few that have not been mentioned that are worthy of attention. Finger speaks very highly of ichthyol. I must say that I have been very much disappointed in the use of this remedy, having found it much inferior to subcarbonate of bismuth. Neisser strongly advises injections of nitrate of silver (1 grain to 6 ounces of water). Dr. J. William White employs an injection containing sulphate of zinc, boracic acid, peroxide of hydrogen, and water.

After all, it is often not so much the drug or drugs that are employed as it is the care taken in the details attending their use that so often cures. It is a great mistake to fly from one drug to another simply because the discharge does not yield to treatment quite as promptly as we think it should.

In one hundred and fifty cases treated according to the method just considered, epididymitis occurred in thirteen. Patients were pronounced cured—*i.e.*, urine contained no clap shreds—in from five to six weeks.

The third method of treatment is that by irrigation of the urethra, no internal treatment being employed and no injections used by the patients. To employ irrigation of the urethra, all that is necessary is an ordinary fountain syringe, raised four to six feet above the patient's waist, and a soft-rubber catheter, No. 14 or 16 calibre, which is slipped over the small nozzle of the syringe. The catheter is slowly passed down to the bulb and as slowly withdrawn, allowing the solution to flow continuously along its side out of the meatus into a basin held by the patient. Very thorough irrigation of the urethra is accomplished in this manner.

One quart of a warm solution should be used, and the irrigations should be employed daily for two weeks. For this purpose three drugs have been used,—bichloride of mercury (1 to 20,000), nitrate of silver (1 to 6000, increasing to 1 to 2000), and permanganate of potassium (1 to 4000, increasing to 1 to 1000).

In a series of experiments recently carried on at the University Dispensary sixty cases of acute urethritis were treated by irrigation of the urethra, no other treatment being used. Of these sixty cases, seven were cases of non-specific urethritis. The results obtained are embodied in an article in the THERAPEUTIC GAZETTE of November 15, 1894.

Of the fifty-three cases of specific urethritis, three were cured in three weeks, thirty-one were very much improved, and ardor urinæ and chordee were quickly relieved in all. Epididymitis occurred in only one instance.

Of the remedies used, permanganate of potassium proved to be far in advance of the others in efficacy. The three cases of specific urethritis cured were treated by this drug, and four cases of non-specific urethritis were cured by its use in fourteen days.

Bichloride of mercury was found to be of the least value, by reason of the fact that those solutions strong enough to have any effect on the gonococcus were found to be very irritating to the mucous membrane of the urethra, causing considerable pain. At the end of two weeks' treatment there still remained a thin mucoid discharge, containing gonococci in small numbers, in forty-nine cases. These were all finally cured by the use of some astringent hand injection.

The advantages of irrigation are: 1, a more thorough flushing of the entire urethra; 2, a marked lessening of ardor urinæ and chordee; 3, the small proportion of cases of epididymitis resulting, as compared with other methods of treatment; 4, the very rapid diminution in the quantity of the discharge.

Two great disadvantages that will confront the general practitioner who undertakes to treat gonorrhœa by irrigation are its novelty and the attendant trouble and expense. Every man with the clap has some preconceived no-

tions as to the manner in which the disease should be treated. Such being the case, it would seem at the present time that only hospital surgeons or men with special reputations in the genito-urinary line could, perhaps, adopt this mode of treatment.

The fourth plan of treating acute urethritis may be said to be a combination of the three preceding, and, where it can be properly carried out, seems to be superior to all.

It consists in the daily irrigation of the urethra for two weeks with solutions of potassii permanganate (1 to 4000, increasing to 1 to 1000). In addition, the patient takes inwardly a capsule containing 5 drops each of oil of sandal-wood and balsam of copaiba, six or eight being taken daily.

At the end of two weeks' treatment an astringent injection containing

℞ Zinc sulph., gr. xii;
Plumbi acetat., gr. xv;
Hydrastis, ʒss;
Aq. dest., q. s. ad ʒiv,

is ordered to be used three or four times daily. Under this line of treatment the majority of the cases will probably be cured in about five weeks. This is the method that has been in vogue at the University Dispensary for some time past, and it is certainly giving the very best results.

CONCLUSIONS.

1. That certain drugs have a very positive effect in lessening the amount of urethral discharge.

2. That sandal-wood oil and balsam of copaiba are the two drugs to use for this purpose.

3. That they can properly be given in the early stages of the disease and continued throughout its course.

4. That internal medication alone will not cure gonorrhœa.

5. That the most valuable drugs to be used as hand injections by the patient are subcarbonate of bismuth, hydrastis, sulphate of zinc, acetate of lead, nitrate of silver, and tannic acid.

6. That daily irrigation of the urethra is a distinct advance in the treatment of acute urethritis.

7. That irrigation alone cannot be depended upon to cure the disease.

8. That daily irrigations of the urethra with solutions of potassium permanganate for two weeks, together with the internal administration of sandal-wood oil and copaiba, followed at the end of this period by the use three or four times daily of a hand injection containing sulphate of zinc, acetate of lead, and hydrastis, comprises the best method of treatment and furnishes the best results.

9. That simple non-infectious urethritis can be cured in ten days or two weeks by daily irrigations of potassium permanganate or nitrate of silver.

THE CURE OF CONSTIPATION BY FORCIBLE DILATATION OF THE SPHINCTER ANI.

READ APRIL 23, 1895, BEFORE THE DISTRICT MEDICAL SOCIETY, HUNTERDON COUNTY, N. J.

BY GEO. L. ROMINE, M.D., LAMBERTVILLE, N. J.

DURING the past ten years I have treated a number of cases of chronic constipation by forcible dilatation of the anus, and while I have nothing to offer that is new, yet so successful have been the results of this treatment in relieving or curing this class of disorders, that I feel I need no other apology for again refreshing your minds on the subject.

It is a well-known fact that patients of this class are allowed to make their own diagnoses, while the physician falls in line by prescribing laxatives or purgatives according thereto, with regulated diet.

This paper is not intended to be a description of the anatomy and physiology of the rectum, but to state the fact that, while many of our patients suffer with obstinate constipation from a number of causes, one of the most frequent is a too contracted sphincter.

According to O'Beirne, of Dublin, when a peristaltic action of the bowel proper occurs, the fæces pass from the cæcum through the colon and fall into the rectum. If the call of nature is heeded, a natural passage takes place; if it is not, or if there is a resisting anal sphincter and the contents are not sufficiently liquefied to pass it, an anti-peristaltic movement occurs, which lifts the mass back to the sigmoid flexure, where its watery contents are absorbed, to remain until reliquefied by purgatives or enemas, so that the bowel can be cleared of its contents.

The class of patients who suffer most from this condition are weak men and women. I can now recall the cases of a number of patients who have told me that, between the cathartic doses of medicine and the enemas that often had to follow, an action of the bowels is not only dreaded, but is followed by a feeling of prostration from which they scarcely recover before it has to be repeated.

Nor does the disorder stop here. The constant liquefying of the contents of the colon

makes it possible for them to be absorbed. It is very easy to understand what the effect of this would be. Fæcal matter can be no more nor less than a poison to the blood. The red corpuscles are diseased by it, the health-producing property is destroyed, and we observe the redness of the cheeks disappear, to be replaced by sallowness. Soon the nervous system begins to suffer either through the impaired condition of the blood or a nervous reflex condition caused by rectal ulcers or fissures. The genito-urinary organs also soon show the evil effects of constipation, such as ovarian and uterine congestion attended by dragging pain, backache, pain in the hips, and reflex irritability of the bladder.

But to come to the more important part of the subject,—namely, the surgical treatment of chronic constipation. As we have already said, the anal sphincter plays a very important part in obstinate constipation. First, then, it will become our duty to make a careful examination to determine that our patient is free from any organic obstruction in the rectum or above it. Then we should determine the nature of the constipation and the habit of the patient,—that is, whether, with regulated diet and tonic treatment by strychnine, followed by a light cathartic, the patient returns to his or her constipated condition.

If this be so, the anal sphincter should be examined for the cause. If, on examination, we find it contracted, irritable, and resisting to the finger, and if there has been a habit of resistance to normally formed passages, we may safely advise its treatment by dilatation.

The patient should be prepared by a brisk purge the day before, followed by an enema on the morning of the operation. The treatment is painful and should be performed under ether, as that will give the best results and allow opportunity for thorough examination.

In cases where, from any reason, ether would be objectionable, nitrous oxide gas can be used; but the treatment will, in that case, have to be completed more quickly. The patient should be placed on the left side, in a good light; then inserting a Pratt bivalve speculum in the rectum, the handles should be compressed until the muscle is felt to give; or the speculum can be used for partial dilatation, which can be completed by hooking the two thumbs over the muscle and dilating until the mucous fold of the membrane descends, which shows that the object has been gained as to both the internal and external sphincters. It is well to examine the rectum, while under ether, for ulceration which so often exists in these cases.

After the treatment the parts should be carefully sponged with hot water. Carbolated vaseline or any bland ointment may be used, followed by a compress of hot water. After the effects of the ether have passed away any pain may be checked by a hypodermic of morphine or an opium suppository. In a few cases the urine will have to be drawn, owing to a reflex spasm of the vesical sphincter, which, however, will soon subside.

The third day a mild cathartic should be given. It may be recommended that an ounce of sweet oil be thrown into the rectum the night before. As a rule, the action of the bowels is attended by little or no pain. The patient may sit up from the fourth to the seventh day, according to his or her strength.

As to results. In thirteen years I have performed more than one hundred forcible dilatations, by myself or with Dr. E. W. Closson. The purpose of about one-half of these was to facilitate the treatment of hemorrhoids, irritable ulcers, and fistulæ, while the remainder were performed for constipation alone. In none of these cases have I observed any bad results. In a few days after treatment the muscle returns or contracts to a normal condition with entire freedom from its former rigidity and resistance.

Some care has been taken to follow up the subsequent history of these patients. The following record of a few cases will serve to better illustrate the good effect of the treatment than anything that can be said.

Case I.—Mrs. A., aged twenty-five years, consulted me in September, 1883, for obstinate chronic constipation. She stated that she had used all forms of cathartic medicine, with only temporary relief. The action of the bowels at that time was becoming painful and much dreaded. On examination, there was found a tight contracted anus, its mucous surface abraded and very irritable. Forcible dilatation gave immediate relief. The abrasion soon healed, and now, eleven years after the operation, she states that she has no trouble, except that during some sicknesses the bowels become slightly constipated, when a light cathartic gives relief.

Case II.—Mrs. B., aged fifty years, consulted me in 1884. She stated that she had suffered from constipation since childhood. The following three years she was treated for recurring attacks of nausea and vomiting, severe headaches, with obstinate constipation. No form of cathartics gave satisfactory relief, and sometimes their continued effects almost produced a collapse. She often told me that there seemed to be something which prevented an action of the bowels, an enema sometimes failing to

come away. In September, 1887, on examination, there was found the usual contracted anus, with mucous membrane slightly prolapsed and constricted. Dilatation was performed with immediate good results, and her bowels became regular, or could be made so with a light laxative; vomiting spells became less frequent and since have disappeared, and the patient is in every way improved.

CASE III.—Miss C., aged forty-eight years, consulted me in 1892 for constipation of long standing; health otherwise fair. Examination was made and dilatation performed. A few days ago she stated to me that the treatment was perfectly successful; she now needs no cathartic, and life is worth living.

CASE IV.—Miss D., aged twenty-five years, consulted me in July, 1894, for impaired health. After three weeks' treatment I observed that she required two or three compound aloin pills daily to overcome constipation. Dilation was advised and done, which has given perfect relief from the constipation. Now, while her health is not what we would wish, we believe that one of the causes of her depressed condition has been removed, which will give her a much better chance to improve.

In conclusion, I believe that one-half of the cases have been so thoroughly cured that a dose of cathartic medicine is rarely taken, and only then through a traditional belief that such a dose is occasionally needed. In the remaining cases patients rarely have any trouble, unless during some sickness that disturbs the regular action, and this is easily overcome by mild dosing; in fact, every case of which I have any knowledge has been benefited. After these treatments some distressing reflex symptoms disappear.

Thus, in the female, persistent occipital headache, indigestion, palpitation of the heart, are often relieved by curing constipation; while, in the male, impotence and the attendant train of symptoms indicating sexual neurasthenia are clearly recognized by specialists as frequent reflex manifestations of rectal trouble. Indeed, the importance of regular evacuations from the bowels is abundantly shown by the fact that, when called to a case, the first question asked by the physician bears upon this point. Though we are all alive to the dangers of acute constipation, we are often not sufficiently alive to the far-reaching effects of this condition when it becomes chronic.

There is, however, no class of cases where, by a little attention and treatment by the regular physician, we can hope to give our patients so much relief, and last, but not least, we can save them from a worse fate,—the quack!

SOME NOTES ON THE TREATMENT OF MORBUS CORDIS BY IODIDES AND OTHER DRUGS WHICH LOWER THE BLOOD-PRESSURE.

BY A. HAIG, M.D. (OXON.), F.R.C.P.

SO far as I can recollect the teaching of my student days, the treatment of morbus cordis seemed to consist of little else than the prescription of digitalis, strychnine, or iron, either singly or in combination, with perhaps an occasional dose of nitrite of amyl. Since that time, however, we have not only had to add a considerable number of more or less useful drugs to our list, but we have also, a more complete and workmanlike grasp of the physics and physiology of the circulation.

To-day there are quite a large number of heart or circulatory troubles in which the use of digitalis is not even thought of, or is considered only as a possible adjunct to other drugs; and, further, there are cases in which we know that, though the heart is apparently failing, digitalis may do absolute harm and make matters worse.

From this point of view it has seemed to me that one of the most useful remarks in Sir William Broadbent's well-known work on "The Pulse," published in 1890, is that on page 262, where, speaking of the pulse in kidney-disease, he says, "Greater service is often rendered to an overweighted heart by relieving it of work than by endeavoring to improve its strength;" and a few lines farther on he adds, "unless it [the heart] is completely worn out, there is a possibility that a diminution in the resistance may enable it to resume its command over the circulation."

Did time permit, I think I could show that there are a number of conditions in which kidney-disease takes no part, in which, nevertheless, far more good may be done by diminishing the work the heart has to do than by endeavoring to improve its strength with digitalis.

But be this as it may, it is to this side of the treatment of morbus cordis, by diminishing the resistance it has to overcome, that I wish to direct your attention to-night.

To a certain extent this is a very old observation, for it has long been recognized that rest in bed did as much for morbus cordis as any drugs; but here, again, the more recent treatment by exercise must have been a surprise to many, and seems at first sight almost a contradiction of previous experiences.

But when we come to look into the matter more closely, I think we shall see that the one

effect common to the use of baths, exercises, iodides, opium, mercury, nitrites, ammonia, alcohol, ether, and other drugs is that they relax the arterioles and capillaries all over the body and thus lessen the resistance the heart has to overcome.

With regard to many of these drugs, I have already pointed out elsewhere* the way in which they produce this relaxation of the arterioles and capillaries; but that does not concern us just now.

In this connection I was much interested to see in the current number of the *Practitioner* a paper by Dr. John Broadbent and Sir William Broadbent on the treatment of morbus cordis by baths and exercises of the Schott system, in which, after considering the explanation of their action given by the authors of the system, they conclude that the baths act by dilating the vessels in the skin, and the exercises by dilating the vessels in the muscles; so that both, either separately or together, diminish the work of the heart.

It appears to me to be practically certain that this is the real explanation of their good effects, and that the writings of Dr. Bezley Thorne† and others have demonstrated in a very interesting manner the great and rapid effects on the position of the apex and the area of cardiac dulness which these changes of resistance produce. And where such effects are produced, we can no longer have any doubt of the enormous power which the resistances at the periphery have over the central organ of the circulation.

It is all very well to read Sir William Broadbent's statement (previous reference, page 153) that under certain conditions the peripheral arterioles may contract so completely as to bring the heart to a dead stand; but if you watch for yourself the alteration of the apex and the area of dulness of the heart, as you keep the peripheral vessels dilated in renal disease or in other conditions of high tension, or listen to the different sounds made by the aortic valves under the two conditions, you will realize what these things are and what they mean for the heart far more completely than it is possible to do from any printed description.

Let any one who suffers from migraine listen over his aortic valves when the pain is severe and again when it has passed away, and he will never again doubt the effects of contracted arterioles on the work of the heart and the pressure in the aorta.

It is interesting to note in passing that baths and exercises which dilate the arterioles will promptly cure this headache, and that it passes away as soon as the dilatation of vessels is complete, just as it does under the influence of mercury, opium, or any other of the drugs mentioned above.

Similar observations may be made in mental depression associated with high blood-pressure, and in similar functional conditions up to Bright's disease itself; and in mental depression the good effects of exercise have been pointed out by Professor Lange, of Copenhagen, and others.

In thus speaking of the good effects of baths, exercises, and drugs, that dilate the arterioles and capillaries and lessen the work the heart has to do, we must not, I think, lose sight of the further fact that in dilating or allowing the dilatation of the capillaries all over the body they of necessity dilate those of the heart itself; so that they not only reduce the work it has to do, but at the same time improve its interstitial circulation and its nutrition.

Before going on to the application of our knowledge to every-day work, I will show three sets of pulse tracings,—A showing the effects of exercise, B the effects of opium, and C the effects of iodides.

A, I think, speaks for itself, the difference between the fairly normal pulse at the top and the tracings below being very marked.

B has at the top the pulse of opium, being fairly quick and moderately soft; and below, in contrast with this, the pulse of what I have called the opium rebound; and it is well known that if a single dose of opium is taken, there will come in the following twelve hours a feeling of headache, depression, malaise, and if the pulse is then examined, it will be found to be slow and will yield tracings such as those in the lower part of B.

I have elsewhere‡ pointed out the way in which opium acts in causing, first, relaxed arterioles and low tension, and then a rebound, with contracted arterioles and high tension, and also the way in which this latter condition may be avoided.

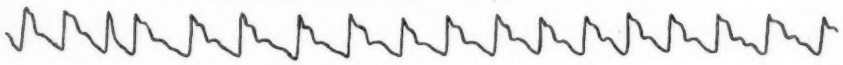
In the two middle tracings at the lower part of B there is a further point of interest, as the pulse is irregular, with imperfect systoles in the upper and drops a beat in the lower, thus demonstrating, as I believe, how great a trial this high blood-pressure is to the power and regularity of the heart's action.

* *Medico-Chi. Trans.*, vol. lxxvi. p. 113, and "Uric Acid," second edition, 1894.

† *Lancet*, 1894, vol. i. p. 1117.

‡ "Influence of Opium and Morphine on Uric Acid" (*Brit. Med. Journ.*, 1889, vol. ii.), and "Uric Acid," second edition, p. 33.

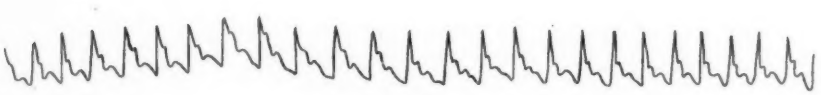
B. Well being produced by opium; pulse, 76; low blood-pressure.

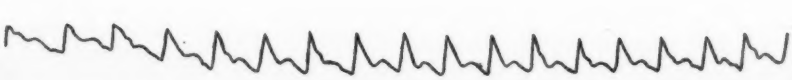


Rebound after opium; pulse, 58, 65, and 68; high blood-pressure.

A. A fairly normal pulse tracing rendered quick.

Effects of exercise.





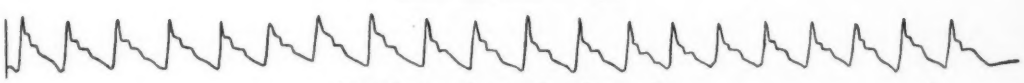
C. Soft pulse under iodides; blood-pressure low.

A. H., November 13, 1892, 11.20 A.M.; rate, 92.

A. H., November 14, 1892, 11.20 A.M.; rate, 90, soft; well-being of iodides taken yesterday continues.

A. H., November 15, 1892, 11.20 A.M.; rate, 86; tension slight; second day after iodides. Threats of rebound each morning early, going off later on.

Same under iodide of ethyl.



First after capsule, second; pulse-rate, 85.

And this constitutes, to my mind, the great drawback to the use of opium in morbus cordis, that when you reduce the dose or leave it off, you will get a rebound with very high blood-pressure, which is a dangerous condition, rendering the patient liable to heart-failure, on the one hand, or rupture of a vessel in the brain, on the other.

C shows the effects of the iodides; the three upper tracings of iodide of potassium and sodium, and the bottom one of the inhalation of iodide of ethyl.

The second and third tracings are given to show that the effect of an iodide given on the thirteenth day continues on the fourteenth and fifteenth, and this is, I think, the most important point about the reduction of blood-pressure by iodides, that it is fairly steady and continues for some considerable time.

The iodides, however, like opium, are followed by a rebound, but this rarely gives much trouble till they have been taken for weeks or perhaps months, and meanwhile the heart's nutrition ought to have very greatly improved.

The rebound after iodides can be prevented just like that after opium, and by the same means; and in cases such as those of chronic Bright's disease, which often have to take these drugs for years, it is necessary to do this now and again from time to time by giving a short course of salicylate of sodium to carry off the accumulated uric acid (see previous references in the case of opium).

With regard to the cases in which drugs that lower the blood-pressure are of use, we may divide morbus cordis into two large groups:

A, those in which the heart fails on account of valvular, pericardial, or other mechanical lesion of its structure.

B, those in which it fails mainly on account of excess of work from contracted arterioles and high blood-pressure.

A includes most cases of rheumatic morbus cordis as met with in early life, and here digitalis finds its most useful field; but even here there are not a few cases in which it is an advantage to combine with the digitalis some drug, as an iodide, which will insure that the arterioles are not adding to the heart's troubles by undue contraction.

B includes the morbus cordis of advanced life, which originates more often in high blood-pressure than in rheumatism, and here digitalis, with its power of adding to the contraction of arterioles, may be decidedly harmful, while the iodides, which relax the arterioles and lower blood-pressure, find their greatest utility.

I could easily give more cases of these conditions than you would have time to listen to; but as my special object is to point out the utility of drugs that lower the blood-pressure, I shall content myself with pointing out the chief clinical features of cases in Class B, in which they are specially useful.

A patient in middle life, or past it, complains of irregularity or intermission of the heart's ac-

tion, perhaps of pain in the chest or shoulders; the pain may be worse on exertion and the breath rather short.

There may be slight œdema of the ankles, slight enlargement of the liver.

On examining the chest, the second sound of the heart is decidedly loud both over the aortic area and at the apex, and in later stages the loud second sound may be followed by the whiff of aortic regurgitation. The apex is somewhat displaced to the left and is ill defined; the first sound is long, or it may be reduplicated, or followed by a murmur of mitral regurgitation, due to dilatation and slight incompetence of the mitral valves.

The pulse-rate may have been slow, but with the general signs of cardiac dilatation and failure it has probably quickened up to 80 or 90, and yet the second sound is decidedly loud and the first sound long or reduplicated at the apex.

There is no history of acute rheumatism, and the whole of the circulatory troubles may be the result of more or less chronic contraction of arterioles and high blood-pressure so common at this time of life, and occurring either as the initial stage of Bright's disease (pre-albuminuric stage of Mahomed) or in its course.

The obvious indication is at once to relax the arterioles and lower the blood-pressure, and if you are able to do this and keep the arterioles relaxed for a considerable time, you may find that the heart not only completely recovers itself, but that you have at the same time prevented or greatly delayed the appearance of the more definite symptoms of Bright's disease.

The action of iodides, opium, etc., on the blood-pressure and the heart's action has, I am aware, been pointed out by many people, both in this country and abroad; but I alone have been able to give an explanation of their action which applies not only to the iodides, but also to a large number of drugs which may be relied on to produce almost equally good results in morbus cordis, and my knowledge of their action also enables me to prevent them doing harm when the rebound occurs.

I have also been able to explain completely why a diet in which milk is the only animal food is (as has long been known) so great a help to the drugs in keeping the blood-pressure low.

I conclude, then, that in the morbus cordis of middle or later life there are no more important drugs than those which, like the iodides, relax the arterioles and lower the blood-pressure; while those, like digitalis, which contract the arterioles and raise the blood-pressure may do great harm.

The one danger in the use of the drugs which relax the arterioles is that their sudden intermission may cause extreme contraction of arterioles and very high pressure, as exemplified in the case of opium; but when their mode of action is kept in mind, such cause of danger can generally be prevented, and if the diet is also altered, very high blood-pressure can be rendered practically impossible for the future.

ANTISEPTIC POWDERS.

By Gwilym G. Davis, M.D., M.R.C.S.,
Surgeon to the German and St. Joseph's Hospitals, Philadelphia.

THE first publication of the antiseptic method by Sir Joseph Lister was in February, 1867, but it was not until Mosetig Moorhof had shown (in 1880 and 1881) the value of iodoform that the use of an antiseptic powder became general in surgery. Previous to its introduction ulcers were disinfected with chloride of zinc solution and covered with protective. There were, of course, exceptional instances in which powders were occasionally used, but principally for disinfecting putrescent material. Thus, since 1858, carbolic acid has been so employed. Corne and Démeaux advised the use of a mixture of plaster of Paris and coal-tar, Parisel used plaster of Paris and carbolic acid, McDougall carbolate of lime and sulphite of magnesia, and Calvert made one of carbolic acid and refuse of alum. Starch, lycopodium, and charcoal were also used with carbolic acid. These powders, however, were used principally on putrescent surfaces, and not applied, as a rule, to fresh operation wounds. In 1876, however, I saw the late Dr. Addinell Hewson, then surgeon to the Pennsylvania Hospital, treat freshly made operation wounds by covering the line of incision with pure salicylic acid powder, over which was laid patent lint, but he did not succeed in inducing the profession to adopt the practice, as did Mosetig Moorhof with iodoform in 1880. Notwithstanding the statement of Watson Cheyne, in his work on the antiseptic treatment of wounds, published in 1885, that he did not consider it a good antiseptic, and that he thought it would not be used for any length of time, iodoform has held its ground ever since. Its objectionable odor, together with its tendency to produce local irritation, and even systemic poisoning and death, have caused substitutes in abundance to be brought

forward; but the most recent and able work on surgical asepsis, by Dr. Carl Beck, 1895, says, "Despite all that may be said against it, it must be conceded that no equivalent for iodoform has yet been found." This statement I believe to be true. Its sphere has been narrowed, but not entirely replaced, by the more recent products. One would think from the amount of attention which surgeons have bestowed on the treatment of wounds that some single method would have been decided on as the best; but such is not the case. The aseptic and antiseptic factions are fighting on even terms. The surgeon who follows the practice of Neuber, and covers a wound made in healthy tissue with sterilized gauze only, is probably right in so doing, albeit I have no doubt that, as yet, he is in the minority, and many surgeons still apply iodoform or one of its substitutes.

The substances which I have tried more or less extensively are boracic acid, either alone or mixed with iodoform, aristol, europhen, salicylic acid, acetanilid, and silver leaf. There are others which I have not tried, and there will be new ones forthcoming, but I no longer have hope of discovering a universal dusting-powder or protective. As time passes it is found that a larger proportion of wounds require no application and do not appear to derive any benefit from it. In an aseptic operation wound there will be only a comparatively small amount of serous effusion, and if this is absorbed promptly by aseptic gauze, it is just as satisfactorily taken care of as if it had passed through the antiseptic covering the wound. The least objectionable application in such cases is the silver leaf, introduced by Dr. Halstead, of Baltimore. He has shown that silver prevents the growth of micro-organisms in its neighborhood. Therefore, should an objectionable discharge come, the presence of the silver leaf will be of service; it also tends to prevent the dressing from sticking to the wound. In large operations, as excision of the knee-joint, in which considerable subsequent oozing is to be expected, or in operations in which drainage has been employed, I would be inclined to prefer it to a disinfectant powder. My experience with it has been too limited to speak positively in regard to it, but so far it has been favorable. It cannot, however, be introduced into the interstices of a wound as can a powder.

The properties of iodoform which have made it desirable to me are its power of disinfecting and keeping sweet an infected wound longer and better than any other substance; also in a suppurating wound it distinctly diminishes the discharge of pus and stimulates granulation.

Boracic acid is often used, on account of its mildness, as a dusting-powder; but while it acts satisfactorily enough if the skin is unbroken, yet if it is vesicated or cracked, then the powder on touching the raw surface produces considerable smarting and pain. On ulcers it does not seem to possess the drying properties found in other powders and is not so efficient as an antiseptic. It is valuable mixed with iodoform, as it then prevents the latter from packing and makes it more manageable.

Salicylic acid is markedly stimulant in its action on granulating surfaces. It may be used occasionally to hasten the healing of chronic leg ulcers, but it causes too much pain for general use.

Aristol has always impressed me as being a somewhat inert powder. It has a distinct place, however, in affections of the mucous and serous membranes. One patient in particular progressed very satisfactorily when aristol was dusted upon an ulcerated lip. It seemed to remain in place longer than any other substance. It is of distinct value in peritoneal surgery as a means particularly of guarding against the formation of adhesions. In general ulcers and wounds it is an admirable drying powder, and while not very active, is still not at all irritant.

Europhen in my hands has not acted so efficiently in infected wounds as has iodoform, while it has proved more irritating. It is stimulating, producing granulations of a peculiar red color, but its use was at times accompanied by an eczematous eruption around the wound which led to its discontinuance.

Acetanilid has certain properties which render it valuable in many cases. It reduces the amount of discharge, tends to keep the wound sweet, and, above all, has a distinctly sedative effect. It is speedily dissolved by the wound secretions, so that when the dressing is changed no vestige of the drug is visible. The formation of an impervious scab is not so common with it as with iodoform and aristol. It seems to decompose blood, for the serum which exudes on the dressing is changed by it from a red to a brownish color. Its sedative properties are so marked as to sometimes render its continuation objectionable in cases where healing depends on the growth of granulation tissue. Under its use the granulations become of a pale pink color and loose and relaxed in texture, differing markedly from the bright vermilion red of those of iodoform and europhen. This action was seen in a case of ex-

tensive lacerated wound of the palm of the hand. Acetanilid was used for the first week, and while the discharge was very slight, superficial sloughing continued, with formation of pale, sluggish granulations. It was then discontinued and iodoform substituted, and the sloughing ceased, healthy granulations sprang up, and healing progressed rapidly. The same effect was shown in other cases. It possesses a distinct advantage over iodoform and europhen in not producing any local irritation, but, like iodoform, it may produce constitutional symptoms; for this reason it is not safe to use it over too extensive a raw surface. Used in the form of gauze packing for cavities, it requires changing more frequently than does iodoform. The value of iodoform depends largely on its insolubility, so that gauze impregnated with it remains aseptic longer than if prepared with acetanilid. As acetanilid has distinctly pus inhibitory properties, it is sometimes of service in the form of gauze as a substitute for iodoform, being, of course, changed more frequently.

The value of powders is greater in minor than in major surgery. This is because the number of doubtful and infected wounds is greater, and because the injured parts are smaller, and therefore present many inequalities and crevices which the gauze dressing fails to reach, but which are nicely evened up by a powder.

In major surgery a powder is desirable at times to counteract present infection and to guard against an exposed surface becoming infected, as in operations for carious bone, compound fractures, and the like. Iodoform can be sterilized, but I know of no way of sterilizing acetanilid.

In minor surgery the principal value of a powder is as a desiccant, and in a large number of cases it is a matter of but little importance which one is used. Acetanilid is as good as any and much cheaper than some. It is particularly valuable where marked evidences of inflammation and irritation are associated with suppurating wounds and ulcers; but in cases of crushed fingers in workmen and like injuries, where I am particularly desirous of avoiding subsequent sepsis, a careful trial for the past two years has failed to convince me that acetanilid is the equal of iodoform. Silver leaf, as introduced by Halstead, is too inconvenient to use in dispensary practice, but in major operations it does act as a protective to the wound, and its use probably adds a slight additional safeguard against possible accidents.

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INFANT MORTALITY DURING LABOR, AND ITS PREVENTION.

By H. R. Coston, M.D., Fayetteville, Tenn.

IN the following study of causes of the death of the fœtus during labor and the best methods of saving its life, I shall consider,—

1. The diseases of the parents which may render the child more susceptible to the traumatisms of labor or act directly on the child.

2. Abnormal conditions of the mother rendering labor difficult and endangering the life of the child, including accident to the mother during labor.

3. Abnormal presentations of the fœtus, and complications.

4. Diseases of the child and accidents attending its birth.

5. Meddlesome midwifery and its consequences.

It is well to introduce Ramsbotham's table of still-births here, that it may aid us in the pursuance of this subject. Of 48,996 deliveries and 49,538 children, there were 1822 still-born children; of these, in 240 no cause is given, 478 were premature, 230 were putrid at birth, 253 were breech cases (20.8 per cent. of all breech cases), 97 were transverse (61.4 per cent. of cross cases), 50 were placental presentations (60.2 per cent. of placental presentations), 17 delivered by forceps out of 73 cases, 85 accidental hemorrhage (53.5 per cent. of cases of accidental hemorrhage), 18 under convulsions of 27 commencing before delivery, 62 under very lingering labor, 9 under ruptured uterus or vagina, 128 under prolapsed funis (7.04 per cent. of *all* still-births), 11 under face presentations (61 per cent. of all still-births); 30 were monstrous; 10 mother nearly dead with cholera; 33 fright, anger, or accident to mother; 7 in twin-births, no other cause given; 1 in triplets, no other cause given; 1 born with abscess in neck. Although this table is old, it serves as a guide to the causes of fœtal death and well deserves careful study.

Among systemic affections of the parents which cause the death of the fœtus at or before birth, syphilis is beyond doubt the most common and at the same time an affection which yields good fruit to appropriate treatment. A very high authority states that eighty-three per cent. of premature or still-births are due to syphilis in one or both parents. When we add to this the fact that more than two-thirds of syphilitic children born to time and alive die within a short time after birth, it behooves us to attend more closely to such cases. When a pregnant woman is known to be syphilitic, or

it is known that the father is a syphilitic, she should from the very beginning of pregnancy receive active antisyphilitic treatment. Iodide of potassium and the various mercurials should be given without stint. A very favorite prescription with me is,—

℞ Hydrarg. cum creta, ʒi;
Sodii bicarb., ʒii;
Pulv. gentian, ʒiss;
M. ft. cap. no. xxx.
Sig.—One after each meal.

The father should receive treatment before impregnating his wife, and the treatment should be kept up by her during gestation.

Tuberculosis of the mother may so reduce her that her child cannot withstand the necessary pressure incident to labor, or the mother may not have the strength necessary to deliver herself. Treatment available in such cases when called in at the hour of labor is to dilate the os and deliver with forceps. This is usually easily done. Several years ago I was called to Miss T. H., who had been in labor three days. She was in the last stage of pulmonary consumption. The os was soft and easily dilated and the pelvis large, but the strength of the woman was so far exhausted that she was unable to deliver herself. I adjusted the forceps and easily delivered her of a living girl. She would undoubtedly have died undelivered had she not received help. She died in a few weeks of the pulmonary disease. When the physician is called in sufficiently early in such cases, he should make use of tonics, iron, cod-liver oil, strychnine, and the most nutritious diet.

Septicæmia, variola, typhoid fever, malarial fever, erysipelas, measles, scarlatina, cholera, acute rheumatism, recurrent fever, yellow fever, or any exhaustive disease of the mother may be the cause of still-birth. In cases where the fever runs extremely high and cannot be kept below 105° F., if the woman has advanced to the end of the seventh month of gestation, premature labor should be induced in the interest of the child. Typhoid fever should be treated by cold baths; malarial affections by quinine in large doses, in which opium and bromide of potassium should be combined to prevent the uterus taking on action. Septicæmia should be treated by antiseptic lotions to suppurating cavities, and by cathartics, diuretics and diaphoretics, and quinine. Erysipelas, by applications of carbolic acid and acetate of lead locally and tincture of iron internally in large doses. Acute rheumatism should be treated by the salicylates. In a few words, whatever acute disease affects the mother should be energetically treated, to prevent her temperature becoming sufficiently high to cause the death of the fœtus.

In any case in which the mother is undoubtedly in a dying condition it is the duty of the attendant, if he can obtain the consent of the husband, to immediately perform Cæsarean section in behalf of the child.

Albuminuria and eclampsia call for more special attention. Eclampsia, depending, as it does, in the vast majority of cases, on albuminuria, should be prevented by appropriate treatment of the latter. The cause of death to the fœtus in eclampsia is most frequently intra-placental hemorrhage.

The high temperature of the mother and circulation of impure maternal blood in the fœtus may also be a cause. Deficient supply of oxygen, due to the interference of the circulation in the placenta and cord, is another cause of death. The fœtal mortality ranges from thirty-seven to fifty per centum. The prophylactic treatment of this condition is of the greatest importance to both mother and child. It consists in placing her on absolute milk diet as soon as albuminuria is discovered, giving her diuretics and hydragogue cathartics. The treatment of the attack will depend upon the stage of labor. If the os uteri is sufficiently open, or can be dilated quickly to a sufficient extent to allow the application of forceps, this is of first importance. The physician should give a hypodermic of morphine, or give chloroform or chloral and bromide of potassium in large doses. Ether should not be used in the presence of albuminuria. Veratrum viride has many strong friends. It should be given in large doses; 25 drops of Norwood's tincture is claimed by some to be a specific. It may be given hypodermically. Duehrssen recommends incision of the cervix as soon as the internal os is dilated. In seven cases delivered after this fashion he only lost one child, which was already dead before operation. If the os is not open, it should be distended as rapidly as possible, making use of manual dilatation.

Pilocarpine in large doses has been used with excellent results. Of medicinal treatment, that by morphine is possibly the best. Under its use 68.6 per cent. of children were born alive, and where morphine was not used only sixty-four per cent. were born alive. Duehrssen's method gives much better results. Cæsarean section has been recommended for this condition, but it is scarcely justifiable, especially since such good results have been obtained from morphine and Duehrssen's method. The one

great point to bear always in mind is to empty the uterus as speedily as possible. When one is compelled to wait for dilatation to occur, the remedies named should be administered, and in plethoric cases bleeding may be performed, though I think that, as a general rule, morphine or chloral or veratrum viride will, in the hands of the general practitioner, give better results.

Some preparation of ergot should be used hypodermically to produce uterine contraction in case of rapid delivery. The one point to be kept constantly before the physician's mind is to empty the uterus as rapidly as is safe for the mother's tissue, both in the interest of herself and of the child.

In any case of sudden death of a pregnant woman who has passed the sixth month, speedy Cæsarean section should be done. Many lives have been saved by this means. Even if the woman has been dead two hours it can do no harm, and cases are on record where the life of the child had been saved after the mother had apparently been dead two hours. The explanation of this may be that the mother did not cease to breathe as early as the attendants thought. Neither should one refrain from doing laparotomy because the fœtal heart cannot be heard, for cases occur in which it is impossible to hear the fœtal heart sound, although the child is alive and healthy.

By reference to the table given it will be seen that twenty-five per cent. of still-births were premature. While doubtless many of these were due to syphilis, yet it only shows that the physician should give the patient active treatment, as previously outlined, and endeavor to carry her to time. When a pregnant woman is threatened with a miscarriage, she should immediately be put to bed, given a full dose of opium or one of its alkaloids, and kept under it until the tendency of the uterus to contract is passed. In cases, entirely too common, where the woman is in the habit of miscarrying at the sixth, seventh, or eighth month, thus giving birth to a child dead or so enfeebled that it dies shortly after birth, she should be put to bed as the time approaches at which she usually miscarries and given sedatives. Chlorate of potassium has been highly recommended in cases of fatty degeneration of the placenta. I have had excellent results from the following:

℞ Fl. ex. piscidia ery.,
Fl. ex. viburn pru., of each, ℥i. M.
Sig.—Teaspoonful every two to four hours.

Premature delivery is, however, sometimes demanded in the interest of the child. In cases in which a woman is in the habit of giving birth to dead children at term, from the following causes, premature labor is demanded: anæmia, degenerative change or faulty development of placenta, alterations of umbilical cord, cardiac and respiratory diseases, enormous distention of abdomen from ascites, hydramnion, pernicious anæmia, multiple pregnancy, uncontrollable vomiting, hemorrhage from placenta prævia (will be considered further), chorea, convulsion, nephritis, in many, if not all, of which the child shares the danger, and in such cases premature delivery is indicated.

In any case in which the life of the mother is despaired of, labor should be induced to give the child a chance of life. Premature delivery will be found of but little benefit where the woman habitually gives birth to a dead child from organic disease of the fœtus.

Atresia and rigidity of the os uteri are to be overcome by the use of chloral and the relaxing drugs, of which none are better than ipecac. Warm vaginal injections, used freely, are of great benefit in these cases. Prolonged gestation is sometimes the cause of the death of the fœtus. No woman should be allowed to carry her child more than ten calendar months from the last menstruation. This gives time for conception to have taken place on or about the menstrual period after the one that appeared. Five calendar months after the first movement of the child is felt should be the limit of time when the time of first movement is known.

Simple atresia of the os uteri may be overcome by multiple incisions or by a single or bilateral incision of the os. It should not be allowed to remain so long an obstacle to labor as to cause the death of the fœtus or exhaustion of the mother. Atresia of the vagina, vaginal bands, persistent hymen, or atresia of the vulva call for incision. Rigidity of the perineum may be overcome by the forceps or incised. Œdema and thrombosis of the external parts call for incision. Vaginal hernia is usually easily reduced; but should it be large and adherent, so that it cannot be reduced, and the woman at term, Cæsarean section may be called for, both in the interest of the child and of the mother. Hirst relates a case in which he induced labor at the seventh month in order to avoid Cæsarean section. Cystocele may cause a delay of labor. The contents may be evacuated with a catheter, and the prolapsed vaginal wall itself will not be sufficient to cause trouble; but should the labor be delayed because of it, the forceps should be applied and delivery accomplished. Large calculi are best removed by vaginal cystotomy.

Impacted fæces should be removed by rectal irrigation or by the spoon. Fatty growths and polypi of the vaginal wall will, when large enough to obstruct labor, have to be removed by the knife and ligature. Large irreducible labial hernia should be operated on before labor, if the physician is called in before labor begins; otherwise it must be done during labor, if it is so large as to obstruct labor. Wounds of the mother of sufficient gravity to bleed her to death, if the source of the blood cannot be reached, calls for immediate delivery; by forceps, if they can be applied; if not, by Cæsarean section. Tetanic contraction of Bandl's ring,—hour-glass contraction,—if it does not yield readily to manual dilatation under chloroform, demands Cæsarean section in the interest of both mother and child. Uterine inertia calls for strychnine, quinine, hot infusion of red pepper, and hot vaginal douches. Ergot may be given very guardedly. The effects on labor of shortening the round ligaments are usually *nil*, but Chaleix reports a case in which the child was born dead, that may be attributed to the malposition of the uterus caused by shortening only one ligament (*Annual Univ. Med. Sci.*, 1893). Change of position of the woman in such a case would probably result in change of the relation existing between the uterus and the pelvic outlet. If delivery cannot be effected by changing the position of the mother, or by turning, or by the use of forceps, or by a combination of these means, Cæsarean section should be performed before the death of the fœtus from asphyxia due to prolonged labor.

For rupture of the fundus of the uterus and recession of the child within the abdomen there is but one treatment worthy of mention,—viz., instant laparotomy. The choice of methods of dealing with the uterus in such cases it is not my province to consider here. In rupture of the lower segment, where the head can be grasped with forceps, the child may be delivered by forceps, the physician dealing with the uterine wound as may seem best after delivery is effected. If the child has receded into the abdomen, so that it cannot be readily removed without further damage to the mother, laparotomy should be immediately performed. Malignant disease of the uterus demands laparotomy, with total extirpation of the uterus, because if it is of the body of the womb, it may cause a rupture, and if of the cervix, it may bleed the woman and child both to death before labor can be terminated *per vias naturales*.

Cancer of the vagina or vulva must be dealt with *pro re nata*. If it is so situated or is so extensive as to be likely to obstruct labor sufficiently long to asphyxiate the child or bleed to a dangerous degree, I believe Cæsarean section to be the most feasible method of dealing with it. A greatly elongated cervix may so obstruct labor as to require Cæsarean section. Fibroid tumors of the uterus, when they are large enough, or are so situated as to obstruct labor, require Porro's operation. A pedunculated fibroid of the os uteri obstructing labor may be removed per vaginam in some cases. Of one hundred and fifty Porro Cæsarean operations, done by as many different operators, eighty-one mothers recovered. Of the first fifty, thirty-six died; of the second fifty, twenty-four died; of the third fifty, only thirteen died. Thus, under the present aseptic surgery, the mother has a better chance for recovery (and the child almost its only chance of life) under this operation than under the let-alone method. The uterus is liable to rupture itself, or bleed mother and child both to death, or to so prolong labor as to cause the death of the mother from exhaustion and the child by asphyxia.

Ovarian tumors and tumors of the broad ligaments discovered before labor should be removed by laparotomy. Dr. Gordon, at the Fifth Congress of Russian Physicians, gave statistics of one hundred and seventy-six cases in which tumors were removed during pregnancy. Of these, one hundred and sixty-four mothers recovered and one hundred and twenty-two carried their children to term.

Delagenière says that pregnancy is not compromised by laparotomy, but that it is compromised by the tumor, and failure to remove it subjects the patient to the dangers of peritoneal accidents and abortion, which are as grave as those connected with laparotomy. If the existence of the tumor is not known until labor is in progress, it should, if it is so situated as to obstruct labor or be liable to rupture, be removed at once.

If the patient's consent to laparotomy cannot be obtained, it may be tapped per vaginam or through the walls of the abdomen.

In considering methods to be made use of in cases of deformed pelvis, it will be necessary, when considering any operative measure, to also weigh the mother's chances of recovery, for she is not to be needlessly sacrificed; neither is the child to be sacrificed for her, but both given a fair chance of life.

Craniotomy is only mentioned to be condemned. Craniotomy or embryotomy on a living child has no place in the science and art of obstetrics. It is a relic of the past,

which the sooner the physicians of to-day and all time to come forget the better off the mothers and unborn children of the world will be. The maternal mortality attending the operation of craniotomy—take the great masses of the physicians in the country and in small towns as well as in larger towns and cities—is as great as that attendant upon aseptic Cæsarean section done before the woman has exhausted herself, and many—at least seventy per cent.—of the children thus sacrificed would be saved by symphyseotomy or Cæsarean section. Within the last few months I have known three craniotomies performed by general practitioners, with a loss of two of the mothers and a vesico-vaginal fistula in the other one. Two of these mothers were pluriparous women, and could have been delivered by turning or symphyseotomy easily, and the primipara could not have done worse than die under Cæsarean section, and her helpless unborn child would have had an opportunity of life; but as it was they were sacrificed at the shrine of ignorance. Away with craniotomy!

Of the measures to make use of in cases of narrow pelvis, we have a choice between several. Narrowing of the pelvis or shortening of the conjugate diameter is to a certain extent a relative term. A very small child may, at full term, pass through a pelvis unharmed that a well-grown child at the end of the eighth month could not be pulled through without undue force by the use of forceps. It is meet, therefore, that we lay down some general rules regarding the length of the conjugata vera by which we are to be governed in the various procedures about to be considered. The following may be given as the diameters requiring the different operations necessary in various degrees of deformity: below sixty-seven millimetres, Cæsarean section; from sixty-seven to eighty-five millimetres, symphyseotomy; above eighty-five millimetres, forceps, or turning with forceps to the after-coming head, or either combined with labor induced at the thirty-sixth or the thirty-eighth week.

These are only given as general rules to be governed by in the vast majority of cases, but each case must be, to a great degree, a law unto itself, the physician considering the size of the child's head as well as the pelvic diameters; for an unusually small child might be easily delivered through a pelvis of less than eighty-five millimetres; while, on the other hand, an extra large one could not be delivered by symphyseotomy through a pelvis of sixty-seven millimetres without doing fatal injuries to the child and possibly to the mother. This is a factor which is never to be lost sight of. The dangers to the child attendant upon the use of the forceps are too great compression of the head and too much strength exerted in traction.

Only a very moderate amount of compression should be made use of. After the blades are in position and closely clasping the head, they may be pressed together one-half inch more at the ends of the handles (supposing one to be using Elliot's forceps); beyond this I think one is scarcely justifiable in going, but should resort to symphyseotomy or other operation, according to the diameter of the pelvis.

All cases that cannot be delivered safely by the use of forceps, or by turning and forceps, should be delivered by symphyseotomy, Cæsarean section, or premature delivery. It now becomes necessary to determine what procedure to make use of, choosing among these three operations.

The infant mortality in premature delivery is frightful. At least fifty per cent. are born dead, and thirty per cent. of those born alive die within a few months after delivery. Professor Pinard, at the Eleventh International Congress, gave the following statistics for the years 1892 and 1893: thirty-eight symphyseotomies, thirty-six living mothers and thirty-four living children; induced labor, sixty-four cases, sixty-two living mothers and thirty living and thirty-four dead children. Commenting further on this, Professor Pinard said that of symphyseotomy children, seventy lived and six died; and of premature children, ninety-two lived and thirty-six died. He condemns embryotomy, and says that it should be replaced by Cæsarean section, symphyseotomy, or induced labor.

C. P. Noble considers the danger to the mother about equal in induced labor and symphyseotomy, while symphyseotomy at term gives the child at least sixty per cent. more chances of life than induced labor.

In 1892 there were eighty-five symphyseotomies done in twelve different countries of the world, with eleven maternal and twenty-six fœtal deaths (Harris's personal communication). Most of these were operations done by men who had never operated before or even seen the operation performed. With the increasing knowledge and the performance of the operation before exhaustion of the mother takes place or the child becomes asphyxiated, the mortality of the mother and child should be reduced to almost *nil*.

Hirst has had four symphyseotomies with no deaths. I would lay it down, therefore, as a

law that in any case in which it is necessary to deliver the woman by induced labor or symphyseotomy, to invariably choose the latter, and to combine the two operations when it is doubtful if a living child can be delivered at term by symphyseotomy.

All cases that cannot be delivered by the above means are to be delivered by Cæsarean section or some of its modifications *at term*. Of the conduct of the physician in cases coming under his care before viability of the child, and in which it is impossible to deliver a living child at or beyond the seventh month by symphyseotomy, it is not my province here to speak at length, but I should be governed a great deal by the wishes of the mother, and if she desired an heir, I should let her carry her child to term and do an aseptic section.

Deformities produced by rachitis, osteomalacia, or exostoses of the pelvic wall will demand forceps, symphyseotomy, or Cæsarean section to save the child, or child and mother, according to the deformity of the pelvis produced by the disease.

Fœtal deaths from morbid conditions of the placenta are not rare. Of degenerative diseases of the placenta we have no means of diagnosis save the habit of miscarrying at certain times of pregnancy. When a woman is known to miscarry at, say, the seventh or eighth month, and the placenta is always found diseased, in a subsequent pregnancy she should receive treatment suitable to the cause found. If syphilitic, she should have mercury and iodide of potassium; if it is a fatty degeneration, she should be given chlorate of potassium; if due to an endometritis, treatment before conception and rest in bed with sedatives after conception.

Accidental hemorrhage demands immediate delivery. If the os is sufficiently open, apply forceps and deliver at once; if not open, but dilatable, dilate with all possible speed and apply forceps. If the os is rigid, Cæsarean section is justifiable. It is better to do it antemortem than post-mortem. In placenta prævia I do not think it best to try to carry the woman to term, but with the first hemorrhage to deliver her if she has reached the end of the seventh month. In such cases the vagina should be very tightly tamponed until the os begins to dilate. A Barnes bag should then be introduced and the os dilated as rapidly as possible. As soon as the dilatation has become sufficient, detach the nearest side and turn the child, bringing down a foot. Deliver as rapidly as is compatible with the mother's safety.

A very short funis might be the cause of the death of the fœtus. I once had a case in a primipara in which a very short cord was wrapped around the neck, and before I could remove it, after the head was born, a powerful uterine contraction took place, rupturing the cord and delivering the child. Had no one been present to catch up and tie the funis, the child would most likely have bled to death. Knotting of the cord, caused by the child passing through a loop of the funis, may so obstruct the fœtal circulation as to cause the death of the infant. We have no means of diagnosing this, hence cannot treat it. Circles of the cord about the neck of the child may be drawn so tightly as to obstruct the circulation sufficiently to produce the death of the infant. The loop of cord should be drawn down and passed off the neck as soon as it can be reached by the index finger. Pressure upon the cord caused by its dropping down between the presenting part of the child and the mother may cause the death of the fœtus. Such prolapsed funis should be replaced whatever the presentation. In the absence of a better instrument, this may be done by a loop of tape passed through a ring in a long wire, and the cord caught up in this and carried up into the uterus, and the funis dropped over some portion of the child. In breech cases it should be drawn well down and passed to one side and carefully watched, and as soon as the pressure becomes dangerous deliver at once.

The placenta, when situated low in the uterus, may be detached by the oncoming shoulders. We have no means of diagnosing this unless the child should be observed, through a thin abdominal wall, to be in spasms, when the condition might be suspected and forceps applied and labor quickly terminated.

Detachment of the placenta in head-after cases may cause the death of the fœtus, and should the child begin to have spasms, this condition or pressure upon the cord should be suspected, and in either case labor should be terminated immediately.

Premature rupture of the membranes may be the cause of asphyxia from the increased force exerted upon the child's head. Rupture of the membranes should be avoided until the os uteri is fully dilated, and rupture should usually be allowed to occur spontaneously. Should it occur spontaneously and the os rigid and undilated, give a large dose of hydrate of chloral, which, in my experience, is the best drug we have for relaxing a rigid condition of the os and at the same time allowing labor to progress. Emetics, especially ipecac, and bleeding have also been recommended in such cases.

These cases very often have to be terminated by forceps, though occasionally the membranes rupture and the waters escape many days before labor, and the labor is quite easy. In another article I have published a case in which the membranes ruptured and the liquor amnii escaped forty-six days before labor, yet the labor was very easy, and a large, healthy, well-formed boy was born.*

The child being born with a caul might be the cause of the death of the infant. Such cases simply demand an immediate rupture of the membranes.

In any vertex presentation, labor having been in progress four hours after the full dilatation of the os, the forceps should be applied and the child delivered. I firmly believe that more harm is done the child by the continuance of labor and delaying application of forceps than is done it by a skilful instrumental delivery.

Occipito-posterior cases may, from delay, require the application of forceps after engagement occurs; before engagement, turning is usually the better method. Brow and anterior fontanelle presentations should be flexed if seen before the head becomes impacted. The vectis may be of use in flexing these cases or in causing rotation into an occipito-posterior case. If the head has become impacted and cannot be flexed or rotated, so that it will become either an occipito-posterior or a mento-anterior position, symphyseotomy should be done if the child is living. Turning may be done in the first stages. Impacted mento-anterior cases, it seems to me, could be saved by symphyseotomy. There is certainly no more risk to the mother involved in an aseptic symphyseotomy than in a craniotomy, and if the child is living it should by all means have this opportunity of securing life.

Ear presentations, when seen early, should be converted into vertex cases, but if not seen until the uterus is contracting vigorously, it may be necessary to convert into a breech.

In any head case in which the head fails to recede after each pain, showing that it has become impacted, the forceps should be immediately applied and the labor terminated.

Mento-anterior cases usually give no trouble. Should it become necessary, the forceps may be adjusted and assistance rendered nature.

Mento-posterior cases must be converted into vertex by flexion or must be turned and converted into a breech. Should the case be so far advanced when the obstetrician reaches it that neither version nor flexion can be effected, and the child living, open the symphysis pubis and apply forceps, if necessary.

* *New York Medical Journal*, May, 1889.

Cross presentations must be turned. When this cannot be effected, and the child is living, do Cæsarean section. There is no more danger to the mother than from embryotomy, and the child has a chance of life. I have known embryotomy done on the second child of twins in a woman who had previously given birth to five or six children, she dying during extraction of the child from loss of blood from the traumatisms inflicted. This case, I think, could certainly have been turned. At any rate, the woman could only have died during Cæsarean section and the child would have been saved.

Twin cases usually give no trouble, but should one of them be crosswise of the pelvis it should be instantly turned. Should locking of the heads occur, the first child would have to be sacrificed to the second or Cæsarean section done; the latter of which I do not think would be advisable in such cases, inasmuch as the child is usually very feeble and not calculated to live.

The danger in breech and footling cases is in pressure on the cord producing asphyxia, and in traumatisms to the head causing intracranial hemorrhage, and in the slipping of an arm over the head, and in the contraction of the os around the neck of the child after the body is born. Pressure on the cord and its management have already been considered. We should avoid making too great pressure on the head, but merely hold it steadily in the pelvis. Too much compression must not be exerted in case forceps have to be used on the after-coming head. When the breech has passed the perineum, the accoucheur should pass his finger up along the ventral aspect of the child and draw the arms down. Sometimes this can be effected by rotating the child when it cannot otherwise be accomplished. If the os contracts on the neck, anæsthetize the patient profoundly. This will, as a rule, relax the os so that delivery may be completed. Very occasionally it may become necessary to incise the cervix uteri. This may be usually avoided by abstaining from the use of ergot.

Various accidents may occur to the child to endanger its life, such as breaking of arms or of legs, in the different procedures made use of to effect delivery in malpresentations. Care should be exercised to avoid as much as possible all such accidents. An extra large child may so retard labor as to cause its death. When the pelvis is roomy, the case should be dealt with as previously indicated when speaking of delayed labor. Should it be impossible to deliver by forceps, do symphyse-

otomy, and adjust the forceps and complete the delivery.

Ascites, overdistention of the bladder, hydrothorax, or pyothorax in the infant will call for the use of the trocar and canula. Hydrocephalus will usually adjust itself to the pelvis, and be delivered without interference on the part of the physician, though it may so retard labor as to call for the use of the trocar and canula in behalf of the mother.

Spina bifida will usually give no trouble, though, if it is very large, it may have to be punctured. Usually it can be reduced by gentle pressure with the hand, if it can be reached.

Anchylosis of the joints can only be dealt with by Cæsarean section or by forcible fracture of the anchylosed parts. I prefer the latter.

Nothing can be done for most intrauterine diseases, except syphilis, which has already been considered.

Encephalocele is to be carefully protected from traumatism. I know a boy, now seven years old, with an encephalocele as large as a hen's egg at the outer and inferior angle of the os frontis at its junction with the parietal, who has perfect health and is of fairly good intelligence. Such cases are not hopeless.

Ossification of the bones of the cranium may reach such a degree as to obstruct labor and cause the death of the fœtus. The head should be delivered by forceps, if possible; otherwise do symphyseotomy.

The various deformities and monstrosities may be a cause of fœtal death, but each case must be a law unto itself. Fortunately, most monsters are born for only a short life, and we should look chiefly to the mother's good when brought to deal with such a case.

Ante-natal rickets cannot be diagnosed, but should a pregnant woman present herself, giving a history of still-born children from rickets, she should be put into the very best hygienic condition, receive abundant nutritious food, have plenty of out-door air and exercise, with tonics of iron, quinine, gentian, cod-liver oil, and lime salts.

Asphyxia neonatorum is chargeable with the death of hundreds of children every year. Properly treated, the vast majority of asphyxiated infants can be resuscitated. There is a large number of methods that may be made use of, and almost any of them, when used persistently, will give the results desired.

The method of Marshall Hall, Sylvester, or Scholtze will, if carried out properly, give the child an opportunity of life. Byrd's method is excellent and may be described in a few words, as follows: Place the hands under the middle of the back, the fingers parallel and thumbs pointing to the child's head. Allow the arms to fall back on the thumbs and the body to bend back. Raise the arms and fold the body in the diaphragmatic region to the angle of forty-five degrees. Reverse the operation and repeat twenty or twenty-five times per minute.

My favorite method of dealing with obstinate cases is to wipe the child's mouth clean, apply my mouth to the child's mouth, and blow forcibly into it, meantime making firm pressure into the child's stomach with one hand and slightly raising its head with the other hand, and having the nurse raise its arms over the head as I blow into its mouth. The next step is to lower its arms, turn it on its face to allow mucus to run out of its mouth, and make firm pressure on the chest to expel the air. Repeat fifteen or twenty times per minute. The above method has never failed me, but the great desideratum in that, as in any other method, is to persist. I have resuscitated a child that apparently had not breathed for half an hour after birth. A few cases will require persistent work for an hour or more, but we should not despair of life in such cases. One life is worth many hours of hard labor, and the gratitude of the young mother shown the physician in such cases is—to say nothing of his own feelings—sufficient remuneration to induce him to do his utmost to save the child.

The method by the use of the catheter in the trachea, advocated by some, is no better than mouth-to-mouth insufflation, and there is danger of doing damage to the vocal cords. Mild cases will yield to spanking, dipping into warm and then cold water, or the applications of spirits of camphor to the nostrils and on the body.

Premature children should be rolled in warm cotton and kept protected from the chill of the external air several days.

Give all children the breast of the mother within two hours after birth.

Meddlesome midwifery is often the cause of the death of the fœtus by causing excessive uterine action and irregular contractions before the os is dilated. Premature rupture of the membranes, awkward attempts at turning, pulling upon the body sufficiently hard to break the neck in head-after cases, all come under this heading and should be avoided. Ergot should rarely, if ever, be given before delivery. It may so interfere with the circulation in the uterus and placenta as to cause the death of the fœtus from asphyxia or paralysis of the fœtal

heart, or it may cause a rupture of the uterus, and is very prone to give rise to hour-glass contraction.

A CASE OF PETROLEUM-POISONING.

By Cheves Bevill, M.D., Winfield, Ark.

At 5 P.M. on June 24 I was called to see a child of two and a half years of age, who had a short time before drunk some coal oil. The patient was heavy, and it was difficult to get her to notice anything. From a condition of semi-consciousness she rapidly passed into one of stupor. On inquiry, I found that she had taken the oil about an hour and a half before, and at the suggestion of a neighbor had received one teaspoonful of common soda. At this time the child could be aroused, but when left alone would soon drop asleep, as if she had taken too much opium. The eyes were closed most of the time, even when she was aroused. The pupils were somewhat contracted and there was nystagmus. The extremities were cold; pulse, 135 and very weak; respirations, 35 to 40. The temperature was 97° F., and the breath was heavily laden with the odor of the oil. Powdered ipecac was given as an emetic freely, but as it failed to produce an effect, $\frac{1}{10}$ grain of apomorphine was given by the mouth. Eight minutes later the child vomited freely, a large quantity of food being ejected, with which was mixed a quantity of oil. Soon after this the child vomited a second time, getting rid of a good deal of oil; heat was applied to the feet, alcohol was administered internally. Four hours after the oil had been taken the pulse was 150, respirations 40, and six hours after the bowels were freely moved. Alcohol and coffee were continued during the night. Seven hours after the poison had been taken the pulse was 170, respirations 60, temperature being still subnormal, purging was frequent, and each movement contained oil. The next day slippery elm was given to allay irritation of the stomach after the poison was taken. In about three hours the child began to look about; but, on attempting to eat, found swallowing so difficult that she could not take food. After this the child again became drowsy, the pupils became widely dilated, the eyes were drawn to one side, and there was much photophobia. The throat was exceedingly red and scalded looking; twenty-four hours after the poison had been taken she could walk with difficulty, the pulse being 120, the respirations 30, and the temperature 99° F. There was slight suppression of urine, for which I administered digitalis and a decoction of cactus, which speedily produced a free flow of urine; the urine was albuminous.

I believe that cases of coal-oil-poisoning are quite rare, at least they are not commonly reported; but two cases, so far as I have been able to observe, have been reported during the last ten years in the Therapeutic Gazette, and an examination of the other journals to which I have had access fails to reveal reports of any such cases. The National Dispensatory speaks of a patient who died on the twentieth day after being poisoned with petroleum, the cause of death being gastro-enteritis. In his book on therapeutics, H. C. Wood says nothing of such poisoning.

According to Pellew, in "Hamilton's System of Legal Medicine," the total number of cases of petroleum-poisoning amounts to two thousand three hundred and eighty.

NEPHRO-LITHOTOMY BY ABDOMINAL SECTION.

Greiffenhagen (*Von Langenbeck's Archiv*, Bd. xlviii., Heft 4) removed renal calculi by laparotomy, on account of very severe renal colic in two cases, the one a man of sixty-eight years, the other a woman of sixty-five. In both cases the kidney operated on was subsequently examined; one patient died of apoplexy five months later; in the other a movable kidney developed, and caused such complaint that it was extirpated after seven months. In both, only a small fibrous cicatrix was found at the site of the incision into the kidney, and the renal tissue on either side showed comparatively slight changes, which could not have interfered with the functional capacity of the organ. It must be mentioned that the final examination showed in both cases a calculus overlooked at the operation. From his experience the writer draws the following conclusions: the incision of the kidney must be, if possible, in the median line. If the calculi lie outside the median line in the parenchyma near the surface, the incision must be made with due reference to the direction of the straight urinary tubules. Every incision into the kidney must be made under digital compression of the arterial supply, and must be at once closed by suture. Likewise all accidental wounds of the kidney without lacerations should be immediately sutured. In order to prevent the artificial formation of a movable kidney, that organ must be firmly sutured to its normal position.—*Journal of the American Medical Association*, June 22, 1895.

The Therapeutic Gazette

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GEO. S. DAVIS,
Medical Publisher, Box 470,
DETROIT, MICH.
Philadelphia, 714 Filbert Street.

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Leading Articles.

IMMUNITY IN SNAKE-BITE.

THE enormous number of deaths which occur annually all over the world (twenty thousand in India) from the bites of poisonous snakes renders original work destined to prevent death from this cause of very great interest and value. For this reason we have taken the opportunity from time to time of publishing in the THERAPEUTIC GAZETTE, either in the Original or Progress columns, statements of reliable investigators in this branch of research. Fortunately, a high mortality from this cause only results in India, yet in certain portions of the United States a sufficient number of accidents occur to render a knowledge of an effective treatment absolutely necessary. So far the members of the medical profession in America have done more towards increasing our knowledge of the action of snake venom and its antidotes than any other investigators. As is well known, the most notable of these researches were carried out at first by Dr. S. Weir Mitchell, of Philadelphia, who, later, had associated with him Dr. Reichert. Within the last month, however, we have received from Professor Thomas R. Fraser, the celebrated pharmacologist of Edinburgh, an abstract of a paper communicated by him to the Royal Society of Edinburgh on June 1, 1895.

He begins his paper by pointing out that in many portions of the world there are traditions or current beliefs that immunity against poisonous serpents may be acquired by freely handling them, and he then cites a number of instances in literature and in fact in which the immunity to snake-bite has been illustrated.

Far more interesting, however, than these superstitious or theoretical deductions are the results which he has obtained in the study of snake venom obtained from various serpents, and more particularly the fact that he is enabled to obtain immunity in some animals, and, further than this, has prepared a blood-serum from immunized animals which is antidotal in its influence. Having determined the minimum lethal dose of venom for an animal of a certain species and known weight, he found that it was possible, by repeatedly giving a somewhat smaller dose, to increase the resistance of the animal to the poison, and he tells us that it was marvellous to observe the absence of all injurious effects, and even of the production of benefit, in an animal which, for instance, had received in one single dose a quantity of venom sufficient to kill in less than two hours fifty animals of the same weight, and in the course of five or six months a total quantity of venom sufficient to destroy the lives of three hundred and seventy animals of the same species and weight. He has immunized in this manner not only rabbits, but also cats and horses, and the idea naturally occurred to him that if it was possible to produce immunity in a given animal it was also possible that the serum of this animal would antidote the venom of the snake when injected into another animal. He therefore collected the serum of immune animals, and applied to this serum, whether in dry form or in solution, the name antivenene.

The immunizing serum employed in most of the experiments was derived from the mixed serum of three rabbits which had received altogether a dose of cobra venom equivalent to thirty times the ordinary lethal dose. And he found that nearly all the animals which received the venom and the antivenene showed symptoms of poisoning before the antivenene had been administered. In the cases in which death occurred, the duration of life was greatly

prolonged by the administration of antivenene, and Professor Fraser believes that in many instances a second injection of antivenene, made half an hour after the first, would have prevented death. Going still further than this, Professor Fraser endeavored to determine whether the more powerful antivenene is produced by the long-continued administration of small non-lethal doses of venom or by the administration of doses gradually increasing until the large lethal dose is reached. He found that the antidotal power of those which received small non-lethal doses was very slight, whereas that obtained from animals which had received ascending doses was much more marked.

In order to apply the results of his experiments to man, Professor Fraser is now obtaining the large amount of serum which is requisite from a horse which is receiving large and otherwise lethal doses of cobra venom, and he hopes from this source also to obtain sufficient quantities of the serum to permit of its chemical study with the hope that the antidotal constituent or constituents may be isolated.

The chief difficulty in the way of this research at present is in obtaining a sufficient quantity of cobra venom for the animal which is already immune to large doses.

We trust that these experiments of Professor Fraser's may be continued and the results published as rapidly as possible. Many of our readers must have opportunities from time to time of obtaining the venom of poisonous snakes, and we would earnestly urge them to forward this venom, carefully dried or in liquid form, to the laboratory of Professor Fraser at the University of Edinburgh in Scotland.

THE TREATMENT OF RECTAL CANCER.

COMMENSURATE with advances made in operative technique, as applied to other regions of the body, modern rectal surgery has some brilliant achievements to its credit; perhaps none, however, more striking and satisfactory than those connected with recent methods of removing malignant growths of the rectum. It is generally recognized that cancer of the rectum is of slow growth, remains strictly limited during its early course, and if thoroughly removed will not come back, and that it commonly involves the lower segment of the rectum, sparing the mucous membrane included in the grasp of the sphincters. The symptoms are usually sufficiently pronounced, even in the early stages, for a positive diagnosis to be given before there is infiltration of surrounding parts. Even when the disease lies as high up as the sigmoid, by means of the instruments and posture described by Dr. Howard Kelly, an early diagnosis is possible. The teaching until recently has been that all cancers, the upper limit of which could not be defined by the examining finger, are beyond the reach of surgical intervention. The operation for the low-lying cancer was one which completely surrounded the anus, thus destroying the sphincters, freed the bowel, pulled it down, cut it off above the malignant growth, and secured it to the broken surface, or near it, by sutures. By the operation only the low-lying tumor could be reached, and the function of the sphincter was lost in the very great majority of all cases operated on. With the idea of making all cancers of the rectum readily accessible, and, when these muscles are uninvaded, preserving the sphincters, together with their nerve-supply, Kraske practised resection of the sacrum and coccyx. His skin incision is carried from the middle of the sacrum to the anus. The soft parts being retracted from the bones, the lower part of the insertion of the left gluteus maximus muscle is loosened from the side of the sacrum. The coccyx is excised. The lower part of the sacro-sciatic ligament is divided. The lower part of the left wing of the sacrum is then cut away with the chisel, following a bowed line which begins on the left edge of the bone at the level of the third sacral foramen and curves inward and downward along the lower border of this foramen and then around and down to the end of the bone. After the bone is made smooth the patient is placed in the lithotomy position and, the tissues being retracted, the cancer is freely exposed.

Bardenhauer modified the operation by cutting the sacrum transversely across below the third sacral vertebra. Kocher carried the incision from the level of the posterior superior spine of the ilium to the coccyx. He split the sacrum and coccyx below the third vertebra, drawing the parts aside and exposing the rectum. The split bones were afterwards united by suture. Numerous modifications of this operation have been proposed, the most important ones being those in which there is an osteoplastic resection of the sacrum, it, with its overlying soft parts being turned back, and, in completion of the operation, being held in normal position by suture. In the great majority of these operations the healthy bowel above the cancerous infiltration has been se-

cured to the wound, no effort being made to preserve functional sphincters. Rydygier suggests that, while the sacrum is still turned down, an elevator be thrust between the fibres of the pyriformis and gluteus magnus muscles, the skin being divided over the extremity of the instrument, which is thrust from within outward. The resected end of the gut is then brought through this opening and so to the skin. The opening of the latter should be at least two and a half inches long, and should run parallel with and about half an inch below the line joining the superior posterior iliac spine with the upper trochanter. The bowel might be still further closed by adopting Gursuny's procedure,—that is, twisting it once about its long axis before sewing.

The preservation of the lower segment of gut when healthy, and the union by suture of the lower to the upper end after removal by operation, is the ideal method and one which has been successful in many reported cases. Murphy and his followers propose to accomplish this by means of the button. Heuston makes an incision from the rectum to the coccyx; this, being in the median line, severs the attachment of the external sphincter and levator ani muscles to the ano-coccygeal ligament, the rectum is separated from the surrounding cellular tissue, and clip forceps applied to the rectum at the commencement of the ampula, below which the bowel is divided; the attachments of the levator ani and sphincter muscles to the bowel are thus not interfered with, and hemorrhage is restrained. The rectum being now completely divided above the internal sphincter, there is not much difficulty in drawing it downward and backward through the median incision, its separation from the prostate and base of bladder being facilitated by having to draw it backward. Clip forceps are applied above the diseased portion, which is removed by scissors. The upper portion of the bowel is fixed by deep sutures attaching it about an inch above its cut extremity to the recto-vesical fascia and levator ani and the peritoneum. In applying these sutures care should be taken that the mucous coat of the bowel is not penetrated. A second row of sutures is applied between the cut extremity of the bowel and that portion which had been originally left below; these sutures should penetrate the entire thickness of the bowel in both instances. The object of the upper row of the sutures is to so fix the bowel as to obviate the danger of the sutures uniting the cut extremities of the bowel tearing through. The incision from the anus to the coccyx is closed, the most anterior suture including the posterior aspect of the bowel, but not penetrating the mucous coat. The levator ani and sphincters will thus have their normal relation to the extremity of the bowel preserved. It might be thought that the lower portion of the bowel is in danger of sloughing, owing to the superior and the middle hemorrhoidal arteries being cut away from it, but the hemorrhoidal branches of the pudic arteries are sufficient to maintain its vitality.

The advantages offered by modern operation are that they make accessible all cases of cancer of the rectum, if seen before infiltration of the surrounding lymphatics and tissues, that the removal can be complete, that in many cases the function of the sphincter can be preserved, that the percentage of permanent cures is steadily increasing. The mortality of the two hundred and four cases collected by Fenger is 28.5 per cent. Von Bergmann has, however, reported twenty-seven cases with only one death. With increased dexterity and with diffusion of knowledge as to methods of direct examination we can confidently look forward to the time when the general mortality of operation will be reduced to that of ordinary major operations, and when the results will be such that colotomy will be the exception instead of the rule.

THE USE OF THE THYROID IN INTERNAL MEDICINE.

WE have from time to time recorded in the Progress columns of the THERAPEUTIC GAZETTE the advances which have been made in the treatment of disease by the employment of the thyroid gland or its extract in myxœdema, of the use of extract of pancreas in certain forms of diabetes, and of various experiments which have been made with other organs, with the hope that they might possess a therapeutic value. Perhaps the most recent of these innovations has been the employment of the supra-renal capsules in cases of diabetes insipidus. With these more recent introductions we have little to do in this editorial, however, desiring only to call attention to the fact that we have now reached a stage at which we can recognize the use of the thyroid gland in myxœdema as a permanent therapeutic gain. By far the best summary of this question which we have seen in any language is that of Dr. Meltzer, who contributes a brief but, nevertheless, exhaustive paper upon this topic to the New York *Medical Journal* for May 25, 1895. In the first place, using his careful physiological training and literary research as his basis, he shows

clearly that practically all the extracts of the various organs, such as the heart, kidney, testicles, lymphatic glands, and bone marrow, do not possess by any means the same rational basis for their use as does the thyroid gland, and, to use his own words, "The treatment of myxœdema is valid upon another more solid basis than the cheap hypothesis which recommends a treatment of disease of the liver by the liver of a wolf, or of impotence by the use of the testicles of the donkey or sheep." Myxœdema is caused by the absence or diseased condition of the thyroid gland,—a gland the function of which, as has been proved by careful research, to be the government of certain forms of general nutrition. Further than this, the therapeutic results obtained from the use of testiculine, cardine, ovarine, and similar substances, have been practically *nil*, while the results obtained from the administration of thyroid have been extraordinarily successful. Going on from this general consideration of the value of thyroid in the treatment of myxœdema, Dr. Meltzer points out that the continuous administration of the gland in one form or another is absolutely necessary for the maintenance of the so-called cure. He has employed the powdered substance of the thyroid in a number of cases, and he states that in a case of myxœdema, which he reported to the German Medical Society of New York in 1894, he employed the desiccated powdered thyroid prepared by Parke, Davis & Co., and returned again and again to its use, always bringing about the desired effect. He emphasizes the fact already well understood, that the dose of thyroid is by no means an unimportant question, since overdoses result in labored cardiac action, feeble pulse, great prostration, and general systemic loss of power. All of these disagreeable symptoms can, however, be avoided if the dose is gradually increased, and he recommends that care should be taken to determine the average strength of the thyroid preparation which is to be given. One grain of the powdered thyroid made by Parke, Davis & Co. is about equal to a fifteenth of a thyroid, Meltzer states, and this amount should be given three times a day as the initial dose. Even if this is too much, nothing worse can ensue than tremor, vomiting, and præcordial oppression. Should urticaria be developed, he recommends the employment of $\frac{1}{16}$ grain of pilocarpine three times a day; for general weakness, iron and strychnine, and for any pains or aches, salicylate of sodium and phenacetin. Gradually increasing doses must, as a rule, be employed.

So far Meltzer has only two failures to record: one in which the thyroid administration did not limit the gain in weight, and another in which he had to stop its administration because of profuse diarrhœa. In the successful cases no diarrhœa occurred, so that loss of weight could not have been due to such a cause. When he employed Parke, Davis & Co.'s preparation, as we have already stated, he began with 1-grain doses and rarely exceeded 3 grains. In one instance the patient who took 10 grains a day lost twenty pounds in the first two weeks. He suggests that in cases of obesity thyroid administration may prove a valuable therapeutic advance, particularly in those cases in which there is a labored cardiac action through the deposit of an excessive quantity of fat about the heart, and he records a case of this character in which the thyroid preparation of Parke, Davis & Co., in the dose of 2 grains a day, had begun to produce improvement within twenty-four hours.

Reports on Therapeutic Progress.

ON TREATMENT OF CHRONIC HEART-DISEASE BY THE METHODS OF DR. SCHOTT, OF NAUHEIM.

BROADBENT writes on this topic in the *Practitioner* for May, 1895. He says the treatment adopted is twofold,—(1) by baths containing various mineral substances and free carbonic acid gas in solution; (2) by a series of graduated gentle exercises or gymnastics.

The waters of Nauheim used for bathing purposes are remarkably rich in free carbonic acid gas, one litre of the water containing thirteen hundred and forty cubic centimetres of gas; they are also rich in mineral constituents, containing from two to three per cent. of chloride of sodium and from two to three per cent. per thousand of chloride of calcium and carbonate of iron.

The effect on a healthy adult of a bath in water having such a composition is a slowing of the pulse, with an increase in its volume and force, which may be observed after the lapse of from one to three minutes. At the same time a tingling sensation and feeling of warmth is produced all over the body from the contact of the particles of carbonic acid gas with the surface of the skin. Immediately on entering the bath a feeling of oppression is experienced, which, however, soon passes off. Usually the excretion of urine is increased after the bath.

It is not advisable or safe at the outset to place a patient suffering from heart-disease in a bath so rich in carbonic acid gas and saline constituents, as the effect might be too powerful and harmful consequences result; hence, by a course of baths, beginning with those comparatively poor in mineral constituents and containing no carbonic acid gas, the patient is gradually accustomed to the baths, and is eventually able to take with benefit the strongest baths.

Dr. Schott recommends that the patient should begin with a bath containing one per cent. of chloride of sodium and one per thousand of chloride of calcium freed from carbonic acid gas, and at a temperature of 92° to 95° F. The bath should last from six to eight minutes. As time goes on, the proportion of solids should be gradually increased, as should also the duration of the bath, while the temperature should be gradually lowered. Eventually baths containing free carbonic acid gas and the full amount of mineral constituents may be taken.

The baths at Nauheim freed from gas are turbid and reddish brown in color from the precipitation of oxide of iron. The water as it comes from the spring is clear and sparkling; the gas is driven off by allowing the water to gush out in the form of a fountain many feet high, so that the carbonate of iron is oxidized in the process.

For the "Sprudel" and "Sprudelstrom" baths the water is conveyed direct from the spring to the bath-house by iron pipes. The "Sprudel" baths are those containing the full amount of gas and mineral constituents. In the "Sprudelstrom" baths the natural waters, fully charged with gas, are allowed to rush through the bath in a continual stream as the patient lies in it, so that the supply of gas and the water are being constantly renewed.

The effects of the baths on a patient suffering from heart-disease are similar to those seen in a healthy individual, but more marked. The pulse is slowed, its volume and force are increased. In cases of dilatation of the heart, a diminution of the area of cardiac dulness is usually observed, and the apex-beat comes in nearer to the normal position; the liver is also, when enlarged as a result of right ventricle failure, diminished in size. These results are more pronounced in the baths rich in gas and mineral constituents than in the weaker baths.

The exercises consist of a series of simple movements of each limb and of the trunk made against slight resistance, so that every muscle of the body, so far as possible, is in turn brought into play.

The movements should be made slowly and systematically, and a short interval should be interposed between each. They should be stopped if the patient experiences the slightest distress in breathing, or palpitation or discomfort of any kind; as soon as he is rested they may again be proceeded with. The resistance to each movement should be slight and should be made by a trained attendant.

The movements consist of flexions, extensions, adductions, abductions, and rotations of each limb in turn, and of flexion, extension, and rotation of the trunk. The following is a description approximately of the various movements and of the order which is usually followed in their exercise:

Movements of Upper Extremities.—The patient stands upright with his arms by his side, or if too weak he may sit down. Movements of the upper extremities are first practised, beginning with the exercise of muscles round the shoulder-joint.

The attendant stands facing the patient, ready to direct and resist each movement.

1. The arms are abducted from the sides of the body and raised till they are parallel to one another in a vertical position above the head; they are then brought back again in the same way to their original position.

2. The arms are rotated forward till they are on a level with the shoulder, parallel to one another in front of the body; they are then brought back again to the sides of the body.

3. The arms still being straight, the two hands are made to touch in front of the body at the level of the shoulder, and the arms are then moved outward till they are as widely separated as possible, making with the body the form of a cross; they are then brought back again in the same way.

4. Movements of internal and external rotation at the shoulder-joint are next practised.

5. The hands being brought on a level with and close to the shoulders, they are pushed forward till the arms are straight and parallel in front of the body at the shoulder level; they are then brought back again.

6. The forearm is flexed and then extended at the elbow-joint.

7. The forearm is pronated and then supinated.

8. The wrist and each of the fingers and the thumb are flexed and extended alternately, each in their turn.

9. *Movements of Trunk.*—The body is bent forward from the erect position, as in making a

deep bow, and is then gradually extended till the erect position is again attained.

10. The feet remaining fixed, the trunk is rotated first to the right and back again and then to the left and back in the same way.

11. *Movements of Lower Extremities—Hip-Joint.*—Flexion at the hip-joint of each limb in turn is made till it is raised as nearly as possible to a horizontal position in front of the body, the knee being kept straight; the limb is then brought back again to its original position.

12. Extension is next made till the leg is raised as far as possible behind the body; it is then brought back again.

13. Each leg is then abducted and adducted in turn.

14. External and internal rotation of each lower extremity at the hip-joint is performed.

15. Next, in a similar fashion, movements of flexion and extension at the knee-joint are made, and movements of flexion and extension and of inversion and eversion of the foot may be performed.

No movement should be repeated, except after an interval, the object of the exercises being to bring consecutively into gentle action each group of muscles in the body so far as possible.

The resistance to the movements is made by the attendant taking hold with his hand of the limb which is being moved and gently opposing its movement.

Cases which are likely to derive most benefit from this treatment are those of cardiac dilatation due to overwork or mental worry and those of mitral disease where the right ventricle is beginning to give way and compensation threatens to break down. In cases of adherent pericardium with symptoms of cardiac embarrassment it should be tried.

Cases of aortic incompetence are unsuitable unless symptoms of right ventricle failure have supervened.

Cases of aortic aneurism are unsuitable, as the sudden and frequent changes in the blood-pressure can but do harm.

In cases of true angina pectoris this treatment must be practised, if at all, only with the greatest caution. It may be of service in relieving the embarrassment of the heart by vascular dilatation, and thus act like nitrite of amyl or nitro-glycerin; but there is a risk of syncopal attacks, in which a fatal issue might result.

In cases of fatty heart—that is, fatty infiltration, not fatty degeneration—accompanying general obesity, this treatment should be beneficial, and is not attended with danger if carefully carried out.

ACTION OF ANTIPYRIN ON THE CENTRAL NERVOUS SYSTEM.

Langlois and Guibaud (*Sem. Méd.*, March 27, 1895, p. 132), by graduating doses on animals whose spinal cord had been divided below the medulla oblongata, could distinguish several stages of poisoning:

1. A cerebral stage in which clonic epileptiform convulsions are limited to the head.

2. A cerebro-spinal stage in which the head is still affected with clonic convulsions, while the trunk is attacked with one or more tonic spasms (opisthotonos).

3. A cerebral stage with spinal hyperirritability, in which the shocks caused by the clonic convulsions of the head set up violent reflex movements of the body, comparable to the spasms of strychnine-poisoning.

4. The reflexes of the head disappear at the same time as those of the trunk.

Antipyrin has, then, an eclectic action in the higher centres, and this explains why its sedative action is more marked in head-affections than in spinal.—*British Medical Journal*, May 4, 1895.

HOW TO MAKE IODOFORM GAUZE.

At the request of a number of gentlemen who have attended his clinics, Pryor publishes, in the *New York Medical Journal* for May 18, 1895, the following formula for making a surgical dressing impregnated with iodoform. Fine-mesh gauze is steam-sterilized. It is then dried. After drying, the gauze is soaked in a twenty-per-cent. solution of iodoform in ether for ten minutes. It is then taken out and the excess of ether wrung out with the hands. The gauze is now placed in a basin and covered with a towel. It is left for twelve hours in a warm room, after which time it will be found that the ether has entirely evaporated. The gauze is now of a greenish-blue color, presenting the characteristic starch-iodine reaction. It is unfit for use in this state, the iodine being too free.

The next step is to soak the gauze for twelve hours in a watery solution of bichloride of mercury (1 to 4000). This acts as a "fixing agent," and the beautiful golden color of iodoform again appears. The gauze is now wrung as dry as the hands can make it and preserved in glass jars. Prepared in this way, the iodoform is not held in the gauze in

mere mechanical association, but is in every bast-cell of the fibre (cotton) of which the gauze is composed. The advantage of this is manifest: such a dressing cannot be poisonous, as the iodoform is not absorbed. The addition of discharges and blood to the gauze again turns it greenish-blue, showing that the iodine is again in a free state. So, when the dressings are saturated they are yet sterile. In cavity walls, there being no glycerin in the gauze, no serous exudation is induced. This material has been used by the writer for five years or more, and has largely influenced, in his opinion, the results as well as after-treatment of his operations. He estimates that he makes one dressing where three are made when other gauzes are used.

For instance, he leaves a Mikulicz packing in the abdomen for two weeks, and when it is removed there is no pus, and no rise of temperature while it remains.

In one case where he did a successful hysterectomy for puerperal septicæmia, the last piece of gauze was not removed before the tenth day. In curettage for gonorrhœal and septic endometritis the gauze stays in for five or more days.

In his method of operating for ventral hernia the first dressing is made in from ten to fourteen days.

Ablations of the uterus are not dressed before the tenth or twelfth day.

This is the only dressing he has ever found which is powerfully antiseptic, is non-irritant to the tissues, and remains sterile when soaked with discharges from an infected area.

It is, perhaps, well to mention that the dressing is prepared under an aseptic procedure as precise as that employed at an operation.

As to quantity that may be used: five yards long, one yard wide, in a puerperal uterus; sixteen yards long, four inches wide, in an obliteration of the pelvic cavity; nine yards long, four inches wide, after a sacral resection; and in no instance has there been the least evidence of iodoform intoxication.

So far as the chemistry of the procedure is concerned it is as follows: when the gauze is green after the ether has evaporated, there is iodide of starch and there is free iodine; when the bichloride has been added, there is bichloride in the starch and there is iodoform; when the bichloride is changed to calomel by blood, etc., the iodine again becomes free and the dressing is again greenish-blue. The writer has been told that the above is true with reference to the chemistry, but cannot say whether the result is the same within the body. Certainly, marvellous results are obtained with it.

THE TREATMENT OF ASTHMA IN CHILDREN.

PERIER (*Journal de Mèd. de Paris*, March 31, 1895) gives the following directions for the treatment of this condition in children:

I. During the simple asthmatic crisis.

1. Open the windows and give the patient air, without, however, producing a draught, and apply mustard poultices and plasters to the limbs.

2. If the windows cannot be opened, and if the poultices do not produce the desired result, fumigate with datura, nitrate-paper, or pour out some drops of pyridine, of ether, of iodide of ethyl (in the case of older children) in the neighborhood of the child, upon a handkerchief or in a saucer. The author has often helped a patient who was obliged to live in an overheated atmosphere, by placing over an alcohol-lamp and keeping constantly boiling, a large dish of water containing leaves of eucalyptus.

3. Give the following potion every quarter of an hour in dessertspoonful doses:

℞ Tr. belladonnæ, gtt. v to x;
Tr. grindeliæ, gtt. x to xx;
Tr. lobeliæ, gtt. xx to xxx;
Syr. etheris, ʒiiss to ʒv;
Syr. aurantii florum, ʒv;
Aquæ calcis, ʒii, ʒviss.

4. If there is no improvement give a dose of antipyrin proportionate to the age of the child (1½ grains for each year of the age [?]) in sweetened water.

II. In crises accompanied by acute bronchitis or pulmonary congestion.

1. Cover the chest with mustard cataplasms or dry cuppings.

2. Fumigations and inhalations, as in the foregoing case.

3. Every quarter of an hour a tea- or dessertspoonful of the following:

℞ Tr. belladonnæ, gtt. v to x.;
Syr. ipecacuanhæ,
Syr. etheris,
Syr. codeinæ, of each, ʒiiss;
Syr. aurantii florum, fʒii;
Liquor calcis, fʒii.

III. In simple spasmodic asthma outside of the crises.

1. Give before lunch and dinner a tea- or dessertspoonful of the following for fifteen days:

℞ Potass. iodidi, ʒi to ʒiiss;
Syr. tolutani,
Syr. aurantii, of each, fʒiii.

2. During the next fifteen days a teaspoonful of the following before lunch and dinner:

℞ Sodii arsenatis, gr. ⅛;
Aquæ destillata, fʒviss.

To be taken in a little malt extract or bitter beer.

3. Two days of the week suspend the treatment and give a teaspoonful of the following laxative:

℞ Sulphur sublimat.,
Potassii bitartr.,
Magnes. calc., of each, ʒxv;
Pulv. anis., ʒss.

4. A simple diet, from which are excluded spiced and highly-seasoned meats, fish, etc.

5. Frictions each morning over the whole body with flannel or hair gloves.

6. Exercise as much as possible in the open air.

7. The summer spent in high altitudes.

IV. Asthma with chronic bronchitis and emphysema.

1. Treatment as given above, with the addition of the following:

2. Every morning for fifteen days a quarter of a glass of Labrassere water in hot milk.

3. During the next fifteen days a dessertspoonful of the following in milk:

℞ Calcii iodidi, ʒi to ʒiiss;
Syr. tolutani,
Syr. capillorum, of each, fʒiii;
Syr. codeinæ, fʒi to fʒiss.

4. Every second day paint alternately the anterior and posterior aspects of the chest with tincture of iodine.

5. Baths of compressed air.

6. In summer a vacation in a region of medium altitude.

V. Asthma in malarial subjects.

1. General treatment as for Class III., with the insistence on the use of the arsenical formula for twenty days, to ten of the iodide.

2. During the period of incubation give twice daily of quinine hydrochloro-sulphate, 2 to 5 grains, in capsules or suppositories, or as follows:

℞ Quininæ hydrochloro-sulphatis, gr. iii to vi;
Syrup. rubi idæi, fʒi;
Aq. dest., fʒii.
Sig.—A dessertspoonful every hour and the measures additional as employed in I.

VI. Hay fever.

1. During the oncoming of the attack introduce into the nares absorbent cotton saturated with the following:

℞ Cocaine hydrochlor., gr. viiss;
Cherry-laurel water, ʒiiss.

2. Give the following:

℞ Antipyrin, gr. viiss to xv;
Syr. aurantii,
Aq. destillatæ, of each, ʒiss.
Sig.—A dessertspoonful every half-hour.

Or quinine may be given as above.

3. Send the child to the mountains or to the sea.

4. Look carefully for the cause,—gout, neuritis, hypertrophic rhinitis.

THE TREATMENT OF PNEUMONIA.

In the *New York Medical Journal* for May 18, 1895, INGRAHAM enthusiastically recommends the use of heat in cases of pneumonia. He says there is but one agent that will produce the desired effect, and that is heat, the king of all remedies as regards results, immediate and permanent. It is a powerful stimulant and antispasmodic, and the whole effect of heat properly applied reaches a higher degree of perfection in the treatment of acute pneumonia than is possible in any other pathological condition.

It relieves pleuritic pain.

It induces copious but not exhaustive perspiration.

It is a reliable antipyretic if used in a way to obtain its full physiological effects at an early stage of the disease.

It controls the disease and prevents its further spread.

It is a powerful and reliable cardiac stimulant, a fact long recognized by the laity as well as by the profession.

Its powerful antispasmodic effects have long been recognized in the treatment of dysmenorrhœa, spasmodic croup, gastralgia, neuralgia, rheumatism; and its power of vascular relaxation is demonstrated in sprains, bruises, inflammatory rheumatism, etc.

In the writer's experience, heat, moist or dry, has proved most reliable and valuable, and if obliged to choose between heat and all other remedies, internal or external, he would choose the former.

The great and only shadow which has enveloped this truly grand remedy has been the lack

of an apparatus by the aid of which it can be applied to bring forth its full therapeutic effects. To properly apply heat in the treatment of pneumonia, a high temperature should be continuously and uninterruptedly maintained. The old-time poultice is possessed of so many disadvantages as to more than neutralize its good effects. Poultices are, as a rule, applied over the involved area with what expected ultimate effect is questionable, but presumably to hasten resolution of the hepatized tissue and to relieve pain. While it is possible that they may possess this power to a limited degree, it is doubtful whether the benefit actually obtained warrants the inconvenience and possible dangers, even when the process of poulticing is in the hands of careful and experienced nurses, as it is almost an impossibility to keep the body from being chilled more or less when the changes are made. The more experience the writer has had with poultices in the treatment of pneumonia the more convinced has he become that the patient recovers fully as soon and with as much certainty when poultices are not used. The more he has seen of the effect of heat as a therapeutic agent the more he has been impressed with the idea that if this agent could be utilized in a manner to obtain a maximum amount of its advantages, with a minimum amount of dangers and inconveniences attending its use, it would be one of the most valuable and reliable remedies at our command in the treatment of pneumonia as well as a multitude of other affections. The writer obtained the services of a skilled engineer and mechanic, and, pointing out to him the inadequate means at the command of physicians and nurses to utilize heat, requested him to invent an apparatus which would overcome the obstacles with which we had to contend. He conceived the idea of utilizing known scientific principles, and, with occasional advice from the writer, finally completed the construction of an apparatus. In two years' experience, during which time it has seen much service, the faults in its general workings have been corrected and improvements added, so that it now approaches a degree of perfection not dreamed of when its structure was begun.

The apparatus, on the whole, is exceedingly simple, and consists of an adjustable flannel jacket which covers the thorax anteriorly and posteriorly. To this jacket is attached rubber tubing, coiled and arranged about an inch apart, and attached to such an extent of the jacket as to completely envelop the sides and front of the thorax. The rubber tubing is skilfully mounted in such a manner as to prevent kinking at the curves, and the patient may lie upon it with perfect ease and comfort, and not interfere in the least with the working of the apparatus.

After the complete jacket is adjusted to the patient, a feed-tube is attached to a small reservoir of hot water, the heat of which is maintained by a kerosene-, alcohol-, or gas-burner. The reservoir is placed several feet higher than the patient, and the hot water circulates through the tubing, and is finally conducted by a discharge-tube to a vessel at the foot of the bed. A thermometer is placed in the supply-tank and the heat kept at an exact temperature. As the water flows through the tubing it diffuses a gentle, penetrating heat, and in its passage through the entire jacket only a slight cooling of the water takes place, for the thermometer will indicate only a few degrees lower at the discharge-tube.

When the jacket is first applied, the water should be allowed to flow under a full head for a few moments, following which it may be so checked as only to drop into the discharge-tank. The flow of the water is controlled by stop-cocks at the reservoir and at the end of the discharge-tube. The rubber tubing is so arranged that it can be removed from the jacket in order to facilitate the cleansing and disinfecting of the apparatus.

After treating a considerable number of cases of pneumonia as well as a variety of less dangerous acute diseases of the lungs, the writer has never seen a patient who did not experience the most marked benefit from the apparatus.

Respirations became deeper, less laborious, and markedly reduced in rapidity. This effect is explained by the fact that a high degree of heat, so generally applied as to act upon the entire surface of the respiratory organ, enlarges the calibre of the blood-vessels of the uninvolved portion, thus allowing of the reception at a normal tension of the blood which would in the healthy state go to the area now consolidated. This has the effect of relieving arterial tension, and of exposing a greater surface or area of blood to the air-cells (by the increase in the capacity or calibre of the veins, arteries, and capillaries), thereby relieving the heart action and encouraging a normal interchange of oxygen and carbonic acid.

In a period of six hours, in cases of true lobar pneumonia, he has known respirations to diminish one-third in number, accompanied by a corresponding diminution of temperature and pulse-beat.

RESEARCHES CONCERNING THE PHYSIOLOGICAL PROPERTIES OF THE PHOSPHATES OF LIME.

The undoubted usefulness and the long controversy which has existed regarding the best mode of administering the phosphates have led VAUDIN (*Bull. Génér. de Thérapeutique*, May 15, 1895) to study most minutely the form in which the lime salts, especially the phosphates, are found in physiological solution in milk. His studies lead him to the following conclusions:

1. The phosphates of lime exist in milk as the tribasic salt, and the various influences which tend to precipitate them from their solutions throw them down in the form of phosphates with three equivalents of lime.

2. The phosphates of lime are maintained in solution in milk by the alkalines, citrates, and the lactose which it contains.

3. Phosphate of lime can be produced in the laboratory that will have characteristics of the lime salts found physiologically in milk.

4. Solutions of the phosphates obtained by the use of mineral or organic acids contain the phosphates with but one equivalent of lime salt, and precipitate the phosphates in the bicalcic form, which is not the physiological one.

THE EFFECT OF PEPPERMINT INHALATION ON EXPERIMENTAL TUBERCULOSIS

BALDWIN gives the results of an experimental research on this subject in the *New York Medical Journal* for May 18, 1895.

Coincident with the clinical trials of the peppermint treatment described by Carasso, carried on at the Adirondack Sanitarium, the following experiments were undertaken at the Saranac Laboratory, under the direction of Dr. E. L. Trudeau:

1. To test the effect of the vapor of peppermint oil upon pure cultures of bacillus tuberculosis as a preliminary to,—

2. A test of its influence on the course of the disease in animals inoculated per tracheam and kept in an atmosphere charged with the vapor.

A few animals had first been treated subcutaneously by an emulsion of the oil, but very little of it was absorbed, and the method was abandoned as impracticable.

The experiments of Chamberland, Lucas-Championnière, Koch, and others have shown the disinfecting power of ethereal oils. The contact of the oil itself was found unnecessary to kill or inhibit the growth of bacteria.

The results seem to warrant the conclusions:

1. Although ol. menth. pip. may prevent bacillus tuberculosis from growing in a test-tube, its parasite existence is not hindered by even constant inhalation of the strong vapor of peppermint.

2. Although it has a high power of diffusion, its local antiseptic action in the respiratory tract is probably slight, both on the tubercle-bacillus and other bacteria. (An additional observation tends to confirm this latter view. Fully as many colonies developed on an agar plate made from a swab of the posterior pharyngeal wall of a patient inhaling peppermint faithfully at the time as on others not receiving that treatment.)

THE ADMINISTRATION OF DRUGS TO CHILDREN.

The matter of administering medicines to children is one of great importance, and the study given this subject by DAUCHEZ (*Rev. Internat. de Méd. et de Chir. Pratiques*, May 25, 1895) is full of suggestion. In the therapeutics connected with childhood the more simple the prescription, the more concise, the freer it is from odor, and the smaller its volume the better it will be accepted.

In prescribing, therefore, it should not be forgotten,—

1. That the substances most easily administered are the tinctures and alcoholic extracts, in the form of drops (aconite, digitalis, belladonna, laudanum, etc.), mixed with sweet llquids, as black currant syrup, Malaga wine, currant syrup, prune juice, orange juice, licorice, coffee, and sometimes distilled water. Certain powders that are very active may be mixed in small doses with soups which the children take as daily food; thus may be used scammony, bismuth, magnesia.

2. That powders, on account of the minute quantity which it takes for a dose, are valuable forms for the administration of drugs to children (scammony, jalap, calomel, santonin, etc.); these can be placed on the child's tongue, and are easily swallowed by taking a sip of water.

Further, the elixirs, the biscuits (scammony), the pastilles (lactate of iron), the chocolate (iodides), the electuary (honey and syrup of althæa), mixed with sulphur, with senna (½ to 2 drachms), magnesia (½ to 2½ drachms), confections and syrups can be used in pharmacy to mask the taste of drugs, according to the special liking of the child.

One should avoid using prescriptions con-

taining over 5 drachms, 1 ounce, or 2 ounces; at least, not over this amount should be administered in forty-eight hours to a child of eight or ten years of age.

In prescribing very powerful drugs it is well to avoid danger by prescribing them always in solutions of known percentage.

3. In prescribing poisonous drugs certain rules should be observed. Although there is no positive rule in this matter, the dose for a child under five years should be 1 to 1½ drops of a tincture or alcoholic extract for each completed year [?], and always in fractional doses up to six and eight years.

Active substances (belladonna, opium, nux vomica, etc.) should be prescribed for children under five years in doses ranging from $\frac{1}{12}$, $\frac{1}{8}$, to $\frac{1}{4}$ grain, and in an amount of fluid varying from 5 to 10 drachms, and divided into teaspoonful or dessertspoonful doses in the twenty-four hours. The number of tea- or dessertspoonful doses given in twenty-four hours should be carefully calculated.

4. In giving very active drugs to very young children it is generally best to write out the name and amount of the drug fully and not in figures, and to state at the top of the prescription that it is for a very young child and that the drops should be counted.

In certain cases where the tolerance and docility of the child are not good, recourse may be had to certain medicaments that are capable of being absorbed through the skin or mucous membranes, such as fumigations of naphtaline, tar, benzoin, carbolic acid, creosote, balsams, resins, etc., inhalations of oxygen, eucalyptol, turpentine, tinct. of iodine, and camphor.

Dr. Lefort has used the following mixture with success in the form of inhalations from a vapor-bath:

℞ Pulv. camph., ʒx;
Oleum picis liquidæ, ʒv;
Tr. iodi., ʒv.

Frictions of the following are also useful: mercurial or iodine ointment, turpentine liniment.

Baths of sublimate, sulphurous acid, wine, vinegar, and mustard.

The following drugs are given hypodermically:

1. Morphine sulph., 5 to 10 drops of a one-per-cent. solution.

2. Caffeine.

℞ Caffeinæ citratis, gr. xxx;
Sodii benzoat., gr. xlv;
Aq. dest., ʒii.
Sig.—From 5 to 15 drops hypodermically.

3. Quinine hydrochlorate (Legroux).

℞ Quininæ hydrochlor., gr. xv;
Aq. dest., ʒi.
Fifteen minims hypodermically (4 grains *t. i. d.*).

4. Ether, but with great care, on account of eschars.

5. Ergotinine, 4 drops in the lumbar region.

6. Antipyrin, 4 to 7 grains (as for quinine).

7. Hydrochlorate of hydrastinine in a ten-per-cent. solution, one-half a hypodermic syringe to a full one every other day for children under ten years (Dauchez).

8. ℞ Guaiacol,
Eucalyptol, of each, gr. lxxv;
Olive oil, q. s. ad ʒx.
Sig.—Inject 2 to 10 minims (Roussel).

9. ℞ Creosote, ʒiv;
Olive oil, ʒivss.

Very little used (Legroux).

The following drugs and formulæ are given for internal administration.

Acidum Carbolicum.

Very dangerous in permanent dressings in a strength of over one per cent.

Used externally as a wash; internally in very small dose. Physiological properties, antiseptic (in typhoid fever); three to four days at most. Clyster, 1 to 3 grains; antithermic (in pulmonary tuberculosis).

For external use the solutions should be 1 to 150 or 1 to 200.

For internal use in a clyster the following is recommended (Labric-Ferrand).

℞ Glycerini, ʒv;
Acidi carbolici, gr. i to iii;
Alcohol, q. s., dispensatum;
Aquæ, fʒiii.

As a gargle (Dauchez):

℞ Acidi carbolici, gr. xlv;
Potass. iodidi, gr. lxxv;
Tr. aconiti, gtt. xv;
Glyc., fʒiii;
Syr. pruni Virginianæ, ʒvi, gr. xv.
Sig.—15 drops in a glass of warm water.

Pyrogallic Acid.

Toxic, dangerous, difficult to administer.

Therapeutic Properties.—Astringent, caustic (psoriasis).

For external use, only in the form of an ointment of the strength of one in twenty-five parts. To be used once a week (isolate from surrounding part with vaseline).

℞ Acid. pyrogallici, ʒi;
Vaseline, ʒiii.

As a very active purgative:

℞ Confectio sennæ, gr. v.

This amount to be repeated until the purgative effect desired is obtained.

Cascara Sagrada.

Laxative; 3 to 5 grains in capsule. To children over ten years of age, 7½ grains. Of the fluid extract, ½ to 1½ drachms, diluted.

Ether.

Properties.—Antispasmodic, diffuse stimulant (collapse), local anæsthetic (in spray), general anæsthetic (inhalation).

Dose.—5 to 100 drops, as an antispasmodic.

℞ Aquæ menth. pip.,
Aquæ aurantii florum,
Aquæ menth. viridis,
Syr. tolutani, of each, ʒiiss;
Ether sulph., gtt. xxx.

Iron and Ammonium Citrate.

Properties.—Tonic and stimulant (chloroanæmia).

Dose.—⅓ grain, 4 grains, 7½ grains.

A wine (Dauchez):

℞ Ferri et ammonii citrat., gr. xv;
Syr. hæmoglobin,
Glycerini, of each, fʒiv;
Vin. Malagæ, fʒiiss.

Belladonna.

Much more easily tolerated than opium, especially in the form of the tincture in children from three to six years of age (J. Simon).

Properties.—Narcotic, sedative, and antispasmodic.

Indicated in many diseases (laryngitis, bronchitis, whooping-cough, incontinence of urine, epilepsy).

Dose.—Of the tincture, 2 drops for each completed year of the child's life; when necessary, 30 to 40 drops in a child of four, but given a little at a time (J. Simon). Fractional doses, in suppositories, $\frac{1}{12}$ to $\frac{1}{8}$ grain. In syrup associated with balsam of Tolu: one year, 2 drops; two years, 4 drops; three years, 6 drops; four years, 8 to 10 drops.

Hydrochlorate of Cocaine.

To be watched carefully, rarely given internally.

Properties.—Anæsthetic, analgesic (swabbing the pharynx); earache, whooping-cough (Labric).

Internal Use.—2 to 15 drops of a five-per-cent. solution in twenty-four hours (Veillard).

External Use.—Swabbing with a two- to five-per-cent. solution (Labric).

℞ Glycerini, ʒi;
Aquæ, mxv;
Cocainæ hydrochlor., gr. iv.

Caffeine and the Benzoate of Caffeine.

The best preparation of this drug is the alkaloid caffeine (Huchard); it is well tolerated in large doses without danger.

Properties.—Heart tonic (adynamia); diuretic (asystolia, nephritis with uræmia).

Dose.—⅙ to 3 grains; wine of caffeine, 1½ to 3 ounces in twenty-four or forty-eight hours.

The following is a good formula for hypodermic injections:

℞ Caffeinæ, gr. xxxii;
Sodii benzoat, gr. xlv;
Aquæ dest., ʒii.
Sig.—Inject 15 to 30 minims in twenty-four hours.

Each dose of fifteen minims contains four grains.

Camphor and the Monobromate.

The monobromate of camphor is an excellent sedative, without any depression (Ferrand).

Properties.—Antispasmodic, sedative, and hypnotic.

Dose.—1 to 7 grains.

For hypodermic use (J. Roussel):

℞ Camphoræ monobromat., gr. xlv;
Olei olivæ, q. s. ad fʒii.

DIGITOXIN.

Of the various derivatives of digitalis the one most constant in its effects and more constant than digitalis itself is considered by M. G. Corin (*Les Nouveaux Remèdes*, May 8, 1895) to be digitoxin. Although there has been much said against the constancy of its action, the author believes that it is entirely due to a false method in its prescription and use. In order that a fair judgment can be made, it must be administered according to the best method. It should not be forgotten, for instance, in the case of this alkaloid, that it is nearly insoluble in water. It is not alone necessary to dissolve it in water, chloroform, and alcohol, but it is also necessary to guard against its reprecipitation when it comes in

contact with the fluids of the body; for if it is thus reprecipitated, its action may become cumulative when it is again absorbed in mass. Effects entirely dissimilar may thus be produced by the same dose. To avoid such results the author employs the following formula:

℞ Digitoxin, gr. $\frac{3}{64}$ to $\frac{3}{64}$;
Chloroform, ♏x;
Alcohol at 90°, f℥iii;
Aquæ dest., q. s. ad f℥v.
Sig.—To be taken in three doses.

With this solution the author has never seen a reprecipitation when in contact with water or physiological fluids or serum. On the contrary, solutions in alcohol of twenty per cent. strength, which some authors have employed, reprecipitate under similar circumstances, thus explaining the failures which they have experienced in their experiments.

The drug has been used with excellent effect, and has proved clinically its superiority over the other alkaloids derived from digitalis in the treatment of cardiac asthenia and pulmonary weakness. The author has published his experiments and clinical research that lead him to believe that digitoxin has a veritable abortive action in the progress of an infective pneumonia.

THE NEW HYPNOTICS.

CHÉRON (*L'Union Médicale*, May 18, 1895) studies the hypnotics classified by Bardet as fatty ethers, derivatives of the aldehydes, mineral and vegetable narcotics.

Hypnone and Phenylurethane.—The former gives good results in nervous subjects, the insane, and the alcoholics. The effect produced is very marked, and there is no action on the secretions.

Bardet prefers hypnone to the narcotics in the violent insane. It is employed in capsules, each containing 1½ grains dissolved in oil. The daily dose should not exceed 7½ grains; it should all be administered at one time.

Phenylurethane has only a secondary hypnotic action; it is more especially an antithermic and analgesic (Bardet).

Bardet insists that many of the ethers have an hypnotic effect, especially the fatty ethers, which have a rapid but evanescent action, producing a marked sedative effect, the sleep continuing afterwards, which nothing can interrupt. Their effect is not strong enough in cases of marked excitation, unless doses large enough to produce anæsthesia are employed. The acetate, azotate, and tartrate of ethyl and the valerianate of amyl have a peculiarly marked hypnotic action when inhaled. Urethane is also a fatty ether; its effect is slight, and very large doses are required. Sulphonal, which has the great advantage of having no action on the cardio-vascular system, is one of the more important hypnotics and one of the most useful in the insomnias of the insane; it is useful also, according to Manet, and successful in those insomnias dependent upon functional, as well as organic, derangements of the cerebrum. Rubinowitch has administered sulphonal to two hundred and seventy-five cases of insanity, with the production of sleep in two hundred and sixty-three instances. Bose considers sulphonal the best hypnotic in insanity that is not violent, while, on the other hand, Carlyle Johnstone recommends it especially in recent cases with marked excitation.

It is contraindicated in mania with depression (Hav), while Knoblach has seen it increase hallucinations. Marandon, of Montyel, accuses it of producing grave disorders in the insane,—ataxic movements, mental brutishness, and loss of appetite. Sulphonal is very useful in neurasthenia and in nervous insomnia from excessive mental strain.

Cros has seen it produce sleep in ataxia, though in just these cases Matthes has seen it fail.

G. Sée has found it inefficient in the insomnia of fevers, but often succeeded with it in the insomnia due to the excessive use of tea and alcohol and to disorders of digestion. Knox Bond has seen it produce sleep in cases of the delirium of typhoid, while in just these cases Matthes could obtain no results.

Huchard found that it acted well in the insomnia accompanying chronic aortic inflammation, and Matthes recommended it in the insomnia of cardiac disease. It is contraindicated in angina pectoris and in cases of aneurism with arterio-sclerosis (Huchard, Schevey, G. Sée).

Huchard has employed it in insomnia due to coughing and to neuralgia. He had five unsuccessful cases in fourteen. Schwalbe did not see any beneficial effect upon the insomnia of phthisis, heart-disease, and cancer.

Sulphonal does not act until one or two hours after its administration. Its action continues frequently until the next day or the day following. This shows that it may accumulate easily. As the result of the absorption of too large a dose, or in case of an individual susceptibility, it may produce very serious secondary accidents, as palpitation, ataxia of the lower limbs, hypothermia, and eruptions.

Marie says that the drug is very frequently dangerous. He has seen diarrhœa and vomiting occasioned in those who habitually employ sulphonal. Given in small doses, long continued, a chronic intoxication, with ataxic disturbances, vomiting, constipation, somnolence, physical and intellectual weakness, may result. Frequently the intoxication first shows itself in constipation, oliguria, and, finally, a red color of the urine, which is charged with hæmatoporphyrine and is very acid. The appearance of this color, of gastric pains, and of vomiting are indications for the immediate suspension of the medicament. The bicarbonate of sodium is the best treatment for the chronic intoxication (Müller).

Sulphonal should never be employed unless it is without smell and taste. The maximum daily dose is ½ drachm. It is better never to give over 15 or 20 grains, and then only every other day. In children, 7 grains is sufficient. It may be given in capsules or in solution; it is always well to give a warm drink after it.

Trional and tetronal are of the same class. The sleep produced by them lasts about an hour longer and comes on more rapidly than with the same dose of sulphonal. In the experiments of Galliard, in which he prescribed 15-grain doses to forty patients suffering from various forms of insomnia occurring in acute diseases, chronic bronchitis, phthisis, nephritis, neurasthenia, etc., there were but seven cases in which sleep was not produced. He has never seen serious complications follow its use.

Among the insane trional is very useful; it calms insomnia with agitation, maniacal excitation, and delirium tremens. The action in alcoholic delirium is very important, since sulphonal does not possess this power. It is contraindicated in melancholia and hypochondriasis. It should not be given to cerebral neurasthenics.

Claus considers trional an excellent drug in the insomnia of children resulting from divers nervous causes (chorea, nocturnal terrors), and also from disorders of the respiratory and digestive organs. The dose ranges from 3 to 6 grains between one month and one year, from 6 to 9 grains between one and two years, from 9 to 17 grains between two and six years, and from 17 to 22 grains between six and ten years. The hypnotic should be given fifteen to twenty minutes before retiring, in milk or honey; sleep will be produced at the end of ten or fifteen minutes.

Kehmelewsky gives the adult 30 grains at two days' intervals. Galliard never gives more than 15 grains. Goldmann believes that the dose should never exceed 30 grains, and when the insomnia is not produced by pain, 22 grains are sufficient, while in neurasthenics 15 grains succeed admirably.

Trional produces the same troubles as sulphonal on waking, but causes no derangement of the circulatory, respiratory, or digestive systems, even when its administration is continued for a long time. The accumulation of the drug may, however, engender serious accidents, which are to be avoided by interrupting the dosage or leaving it off occasionally for a short time. It should be given about half an hour before retiring, suspended in a warm drink, and followed by a drink of tea or of soup. While taking this medicine the patient should drink soda-water, Apollinaris, or lemonade, in order to increase the alkalinity of the blood and thus prevent hæmatoporphyuria.

Although paraldehyde has had many advocates, it has been almost entirely abandoned of late. It is regarded as inconstant, it leaves a very unpleasant odor, and it may produce grave disorders of the intestinal tract.

Methylal is also very little employed, though Bardet recommends it in the essential insomnias of the brain-worker, and Krafft-Ebing finds it useful in delirium tremens. It is eliminated rapidly. In the insane, doses as high as 1 to 2 drachms have been employed. In the essential insomnias, 15 to 30 grains are sufficient. It does not produce discomfort on awaking, but is irritant.

All the new hypnotics which contain chloral depend on that for their hypnotic effect, and are powerful according to the amount they contain.

Although there has been much experimentation in regard to chloralamide, the author believes that as neither the physiologists nor the therapeutists are in accord as regards its effects, it is necessary to wait for further research concerning it. Chloralamide deserves to be studied further.

Chloralose has been studied more carefully. The work especially of Hauriot and Richet has shown in general that it is successful in nervous insomnias, cerebral excitation of hypochondriacs, melancholics, and in depressing psychoses. In patients with heart-disease it is very useful, as it does not modify either the action of the heart or the blood-pressure. As it has no effect on the stomach and intestines, it is very useful in insomnias that arise from digestive disorders. It has, however, disadvantages. It has been proved that its administration, even in small doses, may be followed by serious accidents. Sometimes

it only produces mental disturbances, excitation delirium, tremors; in other cases general convulsions follow; finally, it may produce death by heart-failure. This varied action of the drug has led to its abandonment to a great extent, but it may be given if the patient's capacity and tolerance is tested by beginning with small doses of 1½ grains half an hour apart.

Hypnal—a combination of chloral hydrate and antipyrin—is valuable in cases where the insomnia is accompanied by pain, the drugs having a greater efficiency in combination than when separate. It is contraindicated by heart-disease. It should be prescribed in 15-grain doses; the action is rapid. Alcohol should be employed as a vehicle in the form of a liqueur such as Chartreuse.

GUAIACOL.

The results obtained by the employment of creosote in therapeutics have always been variable, and the attempt has often been made to isolate an active principle which has a constant and uniform action. According to M. E. BLAISE (*Les Nouveaux Remèdes*, May 8, 1894), guaiacol, a recently eliminated alkaloid, fulfils the requirements of creosote and is more uniform in its action. Guaiacol is a solid, white, crystallizing in voluminous prisms, having an odor that is not disagreeable, but very persistent, of sweetish taste, slightly biting, but not caustic. It is soluble in sixty parts of water and in the majority of organic solvents.

Its therapeutic value seems to be great in many ways. Administered in doses ranging from 6 to 18 grains, in twenty-four hours it ameliorates in a perceptible manner the symptoms of patients suffering from pulmonary tuberculosis. The drug may be prescribed in capsules, each containing 1½ grains; or it may be administered in solution in wine in the following proportion:

℞ Guaiacol cryst. synthet., gr. xv;
Wine of Grenache, f℥iii.

Certain patients have a disgust for cod-liver oil; the addition of guaiacol facilitates the absorption of the cod-liver oil.

Guaiacol may also be used hypodermically. It should be dissolved in neutral sterilized oil. The proportion should be 1 to 5, or 1 to 2 even, or the amount will be too great for use in an ordinary hypodermic syringe.

In general, guaiacol is well supported by the stomach and increases its tolerance of other drugs, as, for instance, cod-liver oil. This is probably due to its anæsthetic properties, which have made it useful in laryngology. Its employment externally, painted upon the skin, is of but recent date. Applied in this manner, guaiacol shows remarkable antipyretic properties. This fact, first discovered by Sciolla, has been frequently confirmed by various authors. Guinard considers this action to be the product of a reflex through stimulation of the peripheral nerve filaments and an action on the thermic centre. The lowering of temperature is almost inappreciable if the region to which the guaiacol has been applied has been previously anæsthetized. The antipyretic action of the external application is due to the absorption of the vapor by the skin.

One-quarter of an hour after the painting with the solution the patient perceives the taste of guaiacol in the mouth; the temperature is then rapidly lowered two to four degrees. The temperature rises again, more or less rapidly, until, at the end of five hours, it has regained the original height. It may be even hyperthermic. The drug is eliminated through the kidneys. After twenty-four hours the urine does not show a trace of the guaiacol. The amount eliminated by the kidneys may be as great as fifty per cent. of the amount employed.

The application is made in the following manner: the guaiacol is liquefied in a test-tube and painted with a brush upon the chest or thigh. It is necessary to cover the part upon which it has been painted with a mackintosh. When guaiacol synthetically crystallized is employed, not over 30 grains should be applied at one time.

If a solution of guaiacol is employed, glycerin should not be used as the vehicle, as it has been shown that it prevents absorption almost entirely. Vegetable oils should, therefore, be used.

The antipyretic properties of guaiacol, used in this manner, have been employed in the treatment of pulmonary tuberculosis, typhoid fever, acute tonsillitis, erysipelas, etc. In cases of pleurisy the following mixture is advised:

℞ Guaiacol cryst. synthet., gr. xlv;
Tinct. iodi., f℥viss.

Sig.—For two applications at twenty-four-hour intervals, as directed.

Finally, these applications of guaiacol externally have been recommended as analgesics in cases of acute and chronic rheumatism, in sciatica, intercostal neuralgias, and other neural-

gias. In these cases the antithermic action is not sought; one can and does by preference employ a solution in equal parts of guaiacol and dehydrated glycerin.

In the treatment of acute orchitis the following ointment may be ordered:

℞ Guaiacol cryst. synthet., gr. xx to lx;
Vaseline, ʒiii, gr. xx.

It has given excellent results.

INJECTION OF OLIVE OIL FOR REMOVAL OF IMPACTED BILIARY CALCULI.

BROCKBANK, in the *British Medical Journal* of April 20, 1895, reports a case of this character, relieved by the injection of olive oil. He says that in the interesting series of papers on the surgery of the gall-bladder and ducts which have appeared in recent numbers of the *British Medical Journal* a good deal of attention has been paid to the treatment of those cases in which calculi are lodged in the hepatic, cystic, or common bile-ducts, and cannot be removed at the time of operation. Such cases are very difficult to treat. The ducts are deeply situated, and the operator experiences considerable difficulty in localizing the stone and in examining it with the finger. Various mechanical methods have been suggested and are actually in use for removing such impacted stones. The chief of these are crushing with padded forceps or breaking up with a strong needle. There is a source of danger in both these methods, for rupture of the duct may easily result from either, and peritonitis is likely to supervene.

Another method suggested by the writer in the *Manchester Medical Chronicle* for January, 1894, is well worth a good trial. It has the merit of being very simple, free from any source of danger, and very likely to remove the obstruction fairly rapidly. The method is that of injecting olive oil or oleic acid, warmed up to about the body heat, into the gall-bladder and ducts through the fistulous opening. The author was led to suggest this method from observations made in 1892 on the solvent action of olive oil and oleic acid on gall-stones. Both substances are ready solvents of cholesterin and gall-stones, as the following results will show:

A calculus placed in olive oil (temperature kept constantly at 98° F.) lost in four days fifty per cent. of its weight (1.6 to .8 grain). A similar calculus placed in oleic acid under the same conditions lost sixty-three per cent. of its weight in two days (1.21 to .44 grains).

An idea of this rapid solution of biliary calculi can easily be obtained by placing one in olive oil or oleic acid and keeping it at about the body temperature for twenty-four hours.

The apparatus consists simply of a small glass funnel, twelve inches of drainage tubing to fit on the end, and connecting with the funnel a No. 10 or No. 12 Jacques catheter. This is the same apparatus used for washing out bladders, but it is better for the funnel to be small. The catheter is passed into the gall-bladder for about two inches, and then cotton-wool is loosely packed around as it passes through the fistulous opening. The catheter must be held in also, and this the patient can easily manage. The funnel is then filled with the warm oil, which, after the air has escaped from the tubing, is allowed to run into the gall-bladder. The funnel ought to be elevated about ten or twelve inches above the abdominal wall, so as to produce a little pressure. On pouring more oil into the funnel, the gall-bladder and ducts become distended with it and the oil begins to escape through the cotton-wool in the fistulous opening, which acts as a safety-valve; pressure like this can be kept up for a quarter to half an hour without any discomfort to the patient. By this means the oil is forced down to the impacted stone and can be made to play around it. When once the oil comes in contact with the stone it erodes it at a rapid pace, and will soon reduce it enough in bulk to enable the impaction to be overcome and to induce the final expulsion of the stone from the ducts.

DIABETES MELLITUS AND ITS PREVENTION.

In the *Indian Medical Gazette* for April, 1895, BOSE discusses the prevention of diabetes mellitus, and then speaks of the various drugs which control it. He thinks that there is no routine treatment for diabetes, and each case ought to be treated on its own merits. Therapeutic agents can only prolong life. The writer mentions a few remedies which have from time to time been tried by men who have devoted the best of their time to the literature of diabetes. In his practice he has seen diaphoretics and sialagogues act better than alteratives and tonics. Hypnotics are almost inert in graver forms of the disease; they simply make the case worse.

Antipyrin, which is a powerful depressant, seems to act most beneficially in Indian diabetes. He has often seen it make the skin

moist and soft, at the same time reducing the quantity of urine and lowering its specific gravity. The patient gets refreshing sleep during the night, and when he wakes up in the morning he feels himself strong and cheerful. But this sovereign remedy must only be given with caution. Its use is contraindicated in all cases where there is the slightest suspicion of morbus Brightii. Its exhibition has on more than one occasion been the immediate cause of death.

Pilocarpine is another remedy which has been given to diabetic patients with considerable advantage. Small and repeated doses to the extent of ½ grain per diem may be safely tried in cases where there is much thirst and dryness of the mouth; ¼ grain of pilocarpine will keep the tongue and the mucous membrane of the mouth soft. There is one drawback to its long use. It has caused retching and vomiting to a distressing extent, and its discontinuance was not followed by immediate relief.

Opium, when given internally by the mouth, has a decided effect upon the oversecretion of urine and its specific gravity. Nearly sixty per cent. of Indian diabetic patients take opium in its various forms and speak favorably of its effects. But opium, when given hypodermically to a case of diabetes, fails to give any relief. This shows that the physiological effect of opium upon the liver has much to do in diminishing the quantity of urine. The beneficial effect of opium is less marked upon those who use it daily. He does not state whether sugar, under the use of opium, becomes actually less or is merely retained within the system.

Sulphonal, if judiciously given, will surely bring on sleep which has been denied to a diabetic patient. It reduces the frequency of urine, but does not in the slightest degree affect the quantity of sugar.

Asafœtida is another drug which needs mention. In chronic cases ot diabetes, where a patient complains of a sense of sinking depression over his stomach, asafœtida, either alone or combined with nux vomici, may be given with considerable advantage.

PHOSPHORISM.

The Paris correspondent of the *Medical Press and Circular* of May 27, 1895, states that at the Académie de Médecine, M. MAGITOT spoke on the symptoms of phosphorus-poisoning as witnessed among the work-people at the state match-factories. He said that the men employed in the making of the white phosphorus matches constantly inhale the noxious vapors, which penetrate into the blood and the tissues, producing a kind of slow poisoning or chemical cachexia, to which he gave the name of phosphorism.

Inquiry being made, he learned that all the workmen who are exposed to these vapors suffer, without exception and in a more or less degree, from this affection. The malady shows itself by a certain number of symptoms, of which some are general to all the men and others special to certain individuals more or less predisposed. The general symptoms are a cachectic condition, a subicteric color of the skin, a garlic odor of the breath, the presence of phosphorus in the urine and saliva, wasting of the soft tissues, and modification in the chemical constitution of the bones.

The special manifestations of phosphorism depending on the predisposition of the individual are chronic enteritis with diarrhœa, nephritis, cystitis, bronchitis, fragility of the bones, and the production of the necrosis of the inferior maxillary so frequently met with in past years; the gravest of all these accidents, as it leads either to mutilation or death.

This phosphorism is exceedingly persistent and tenacious, continuing for a long time after the individual has abandoned that kind of work, which fact explains the tardy appearance of complications, and especially that of necrosis.

The therapeutics of phosphorism should tend to complete elimination of the phosphorus with which the economy has been impregnated: milk diet prolonged for several weeks and rigorously observed, exercise in the open air, and the administration of some preparation of turpentine. As long as the phenomena of phosphorism exist, any operation practised on the mouth for the resection of the necrosed bone is almost always followed by a return of the disease. Consequently, the surgeon should wait until every trace of the primary affection has disappeared before interfering.

The radical remedy for this condition of things is naturally that which has been so frequently proposed,—namely, the legal prohibition of the employment of white phosphorus in the manufacture of matches.

In conclusion, the speaker asked the Academy to vote a proposition of this nature, and to appoint a committee to study the best way and means to attenuate or abolish the dangers incurred in the match-making industry.

A REMARKABLE CASE OF QUININE-POISONING.

ROBERTS reports the following case in the *Indian Medical Gazette* for April, 1895, and thinks that the subject of poisoning by quinine has not received as much attention from medical authors as it deserves. He therefore records the following case, which is of considerable interest in many ways:

A woman, aged thirty-five, married, no children, in comfortable circumstances, had always enjoyed good general health, but had been troubled for nearly two years with menorrhagia associated with slight uterine retroflexion. This local trouble had been temporarily overcome by treatment, and she had normal periods for three months, when at noon on a certain day in November, 1893, the reporter was hurriedly called to her bedside, as she was declared to be dying.

On his arrival he heard that she had swallowed a very large dose of sulphate of quinine an hour or so before, and from the evidence available, which he carefully and critically weighed, he came to the conclusion that the quantity amounted to about 6 drachms. There is no doubt that she managed to swallow fully 5 drachms, and there were traces of it in the vessel from which she drank and on her lips at the time he first saw her.

She was lying upon her bed totally unconscious,—an inert, paralyzed mass. The whole surface of her body was deadly cold and blanched, or rather livid; her temperature (axilla) 95° F.; breathing almost imperceptible, shallow, slow; pulse, 45, thin, and small. Her eyes were closed, the pupils considerably dilated, with no response to light; tendon reflexes not obtainable, no response to external stimuli, and, save that she at long intervals uttered a low groan, she appeared to her friends to be dead. The outlook was not cheerful.

There was little, if any, change in her condition for several hours, during which she vomited "coffee-ground substance" several times. Indeed, definite and obvious signs of rallying were deferred until the early hours of the next day, and it was then ascertained that, in addition to slight deafness, she was "stone blind," even to total non-appreciation of strong sunlight. The deafness gave no trouble; perfect hearing was restored within a week, with the gradual return of general functional activity, but it was long ere all traces of the tremendous shock to the general system had disappeared, and doubtless the demoralization induced by the blindness and the terrible circumstances served to accentuate the profound debility.

At first, as already stated, the pupils were widely and equally dilated, and did not respond to the stimulus of light; the blindness was the dense, uncompromising darkness of atrophy. It was not until forty-eight hours had elapsed that the writer found an opportunity of using the ophthalmoscope, and the picture obtained was definite and well marked. There was a blur or haze over the whole perceptible retinal field, there was a distinct deepening of color (congestion), especially concentrated in the macula; the disks were not definitely altered in color, but, if anything, perhaps also of a slightly deeper tint than normal (the writer speaks with reserve, as he is not very familiar with the exact shade of the Eurasian disk), but hazy and with ill-defined margins. The impression he received is well represented by a rather highly colored and crude water-color sketch, which has been very slightly smudged,—that is, "smoky,"—so that the contours of the vessels were blurred and not well defined. However, this stage was of short duration. The tint of congestion and the blur alike disappeared, and in a week from the onset he began to fear that optic atrophy would close the scene. The retinal vessels, both veins and arteries, became well defined and contracted, and the optic disks became distinctly pale; the pupils remained widely and equally dilated and insensible to light. He made frequent and regular examinations, but his powers of observation did not avail to detect any very decided change in the ophthalmoscopic appearances during a period of quite three months. The general retinal ischæmia and disk pallor did, indeed, quickly become decided, and remained thus, with no perceptible change, for about six weeks, when a very slight improvement set in; but at the end of three months the condition was much the same as previously described at the end of the first week, after the primary congestion passed off. During the fourth and fifth month a certain distinct but small improvement could be noted at considerable intervals; but on leaving his charge for six months' rest, the retinal anæmia was still the notable objective sign, the disk having fairly regained its normal tint. So much for the objective signs. As regards the subjective the following particulars apply:

The absolute "stone blindness" lasted for fully two weeks; the first perception after that was the flash of light from the ophthalmoscopic mirror, but there was no perception of external objects until the third or fourth week, when cer-

tain things—a small bright metal timepiece, the looming figure of an individual—were seen at a distance of four to eight yards. This distant vision was a marked feature of the case for two or three months, and though it gradually gained in distinctness of outline and detail, was a blurred impression on a dim and hazy background. A noticeable point during the fourth week, also, was her perception of dark linear objects at a distance,—*e.g.*, the parallel beams of the roof of the bungalow and the cross-bars of the windows in the door-ways. Here, also, definite objective points were lost in an indefinable haze. It was somewhat surprising that she could occasionally read the dial of the clock before mentioned at four or five yards' distance, but could distinguish no neighboring object. Color-blindness was marked from the first, but about the sixth week she noted the dark blue of the reporter's necktie; red and yellow were, and are still, best distinguished. From the sixth to the eighth week onward, with occasional relapses synchronous with a return of the menorrhagia and other disturbances of the general health, she gained ground in all points very slowly but surely, and in April last she could write a letter and read large type, the effort being exhausting to her visual faculty, and consequently not persevered in. At this stage he lost sight of the case, owing to his departure on leave, but he recently heard from the patient that, although much better in most respects, there is much left to be desired in her visual powers; she goes about, reads and writes, and uses her mirror satisfactorily for toilet purposes, but her color vision is defective, red and yellow being still most easily distinguished, and these at a distance, nearness of approach causing objects to appear black, the general hazy blur of the background of the visual field being also a trouble to her.

Attention is directed to the likeness of the early symptoms to embolism or hemorrhage into the disk, but this is, of course, contraindicated by the bilateralism and the very considerable recovery, not to mention the absence of ophthalmoscopic evidence. Further, it will be allowed that, in view of the evidence furnished by Laveran ("Paludisme") of the very general fatal effect of doses of quinine smaller than that consumed in this case, the patient did not pay a dear price for her life. The fact that she was frequently losing considerable quantities of blood by menorrhagia probably militated against her more speedy recovery, and the fact that she has since undergone the operation of curetting with satisfactory results would encourage the hope of ultimate recovery.

5

WHAT SHALL A GENERAL PRACTITIONER DO FOR AN ACUTE OTITIS?

DENCH answers this question in the *Archives of Pediatrics* for May, 1895, as follows:

When the pain is due to inflammation either of the external auditory meatus or of the middle ear, and the patient is seen in the early stages of the attack, the physician should attempt to abort the inflammation as well as to relieve the symptoms. The most efficient measure for aborting the attack is undoubtedly the local abstraction of blood. In very young children either wet cupping or the use of natural leeches is difficult, although the cup can be applied if the child is firmly held; and if the physician does not possess enough confidence in himself to manipulate instruments in the external auditory canal, it is certainly wise to employ local depletion. The region selected for the application either of the wet cup or of leeches is that lying close to and immediately in front of the tragus. From half an ounce to one and a half ounces of blood may be withdrawn in this region, and in many cases the measure is beneficial. The patient should be kept in bed and a free catharsis instituted. If the case is seen very early, it is frequently wise to follow the abstraction of blood by the administration of an opiate sufficiently powerful to quiet the patient for five or six hours, in the hope that depletion and absolute rest for several hours may abort the attack. For the further relief of pain, the use of heat about the ear is a means at the disposal of all, and is certainly valuable, either after local depletion or where this measure is not deemed advisable. The most convenient method of employing dry heat is by means of the Japanese pocket-stove; the hot-water bag, although less convenient, is equally efficacious. Where these are not available, a stove-lid, a flat-iron, or a brick previously heated, wrapped in a piece of flannel and placed under the pillow, will supply the place of the more convenient apparatus above described. In order that the heat may be applied more directly, the author occasionally recommends that a small hot salt-bag be introduced into the meatus, heat being applied externally by means of the hot-water bag or other device, as stated before. These salt-bags are conveniently made by cutting off the finger-tips of a kid glove, filling the tips with salt, and placing them upon a hot plate until they are thoroughly heated, after which they are placed just within the meatus and heat is applied externally, as already described.

If there is one point we should emphasize more than another, it is that under no circumstances is any oily substance to be introduced into the meatus. The old practice of dropping warm sweet oil or a mixture of sweet oil and laudanum into the external auditory canal for the relief of otalgia is a relic of barbarism that deserves no place in modern medicine.

The writer does not favor the use of moist heat in the early stages of an acute otitis, consequently the irrigation of the canal with warm water, or the application of poultices to the ear, the canal being previously filled with water, are not measures to be advised. Moist heat softens the tissues and encourages their disintegration, while our efforts in the early stages should be directed towards aborting the inflammation. Heat is employed in the early stages simply for the relief of pain, and dry heat does not encourage suppuration, while moist heat certainly favors it.

If, after the effects of the opiate have disappeared, the pain reappears, it is unwise to administer a second dose, as it will only mask the symptoms. The local abstraction of blood and the application of dry heat are then the only resources at the command of the physician, previous to the appearance of discharge from the ear, unless he is able to use the head-mirror and inspect the parts affected.

After discharge has made its appearance, frequent irrigation of the external meatus by means of a weak antiseptic solution, such as a solution of the bichloride of mercury (1 to 5000) or of boracic acid, is the best measure for combating the inflammatory process and for preventing its extension to the neighboring bony parts. In many of these cases the discharge is serous in character, and will continue so unless it is infected, as it lies in the external auditory canal. All that is needed is to keep the meatus perfectly clean and prevent infection of the discharge. It is unwise to stop the meatus with cotton or to keep the ear covered, as in this way local infection of the canal is liable to occur, causing either circumscribed or diffuse inflammation. While the ear is discharging, considerable relief may sometimes be obtained by filling the meatus with warm water and applying heat externally; a poultice covering the auricle, however, is not necessary, and causes so much maceration of the integument as to constitute a disadvantage; if the canal is filled with water and dry heat is applied externally, we have the beneficial action of the heat and moisture upon the parts affected without inflicting any injury upon the auricle.

After the acute symptoms have subsided, certain measures directed towards checking the discharge may seem necessary. It must be remembered that under no condition should any attempt be made to diminish the quantity of the discharge until the temperature becomes normal and all pain has disappeared. In the large proportion of cases where spontaneous rupture of the drum membrane has taken place, if the parts are kept carefully cleansed, in the manner previously described, the discharge will cease spontaneously; in a small proportion of cases it continues. The use of astringent instillations cannot be recommended. In cases where the discharge persists, it is perfectly safe to use a saturated solution of boric acid in alcohol as an instillation after syringing. A few drops of this solution introduced into the meatus by means of the medicine-dropper, after careful syringing, may be employed with perfect safety, and is usually sufficient to stop the discharge. The objection to solutions of sulphate of zinc and other kindred instillations is that they form an excellent nidus for the development of vegetable parasites, and unless the physician can inspect intelligently, they possess no advantage over the alcoholic solution of boric acid.

OINTMENT FOR CRUSHED LIMB.

When a limb is crushed and surgical treatment has for some reason to be deferred, the following ointment is recommended for "embalming" the injured part. It should be spread on aseptic gauze and covered with cotton-wool.

℞ Salol, ʒiii;
Resorcin, ʒiii;
Antipyrin, ʒiii;
Acid. boric., ʒv;
Iodoform, gr. xv;
Vaselini, ad ℥vi.

—*Practitioner*, No. 323, vol. liv., No. 5.

NITROUS OXIDE IN PROLONGED OPERATIONS.

PEASE urges the use of this gas, in the *Medical Record* of May 11, 1895. He believes that, as a substitute for chloroform and ether in minor and major operations, we have in nitrous oxide gas an anæsthetic not only much safer than the two named, but entirely free from the unpleasant, depressing, and often serious sequelæ.

In ether narcosis the mucous glands secrete profusely, the stomach and fauces are filled

with this secretion, and there is laryngeal and bronchial irritation. The cardiac exhilaration during the administration is followed by a corresponding reaction which is decidedly unfavorable to the patient. The ether being eliminated from the blood by and through the skin, lungs, and kidneys, acting as an irritant, tends to increase any inflammatory condition. A tendency to nephritis, plus the administration of ether, is therefore a serious matter. Experience has proved this to be only too true.

How many patients have never rallied from an operation under ether! Saturated with the anæsthetic, suffering from nausea, vomiting, sweat, frigidity, shock, the feeble patient is robbed of the vital force necessary to recovery.

With gas there are none of these conditions, and the return to consciousness is usually in less time than half a minute after the removal of the inhaler, and in the experience of the writer, who has administered the gas in many operations, the patient comes out of the narcosis as from a short nap, often joking and laughing, with no depression or any unpleasant symptoms whatever.

The dangers of chloroform are too well known to be rehearsed here.

As narcosis can be prolonged under gas up to one, two, three, and four hours, with so much greater safety to the patient and with no unpleasant sequelæ, it must surely come into more general use. The writer admits that he finds it far more tiring to administer gas than the other anæsthetics. But that should have no weight in view of the great advantages to the patient. The cost of gas is also greater, but the patient pays the difference and is glad to do it.

The writer's portable outfit consists of small cylinders containing one hundred gallons of gas each (condensed), with a convenient case for carrying the same, a gas-bag, tubing, and inhaler, with valves to admit air and shut off gas, and *vice versa*.

In the event of the failure of heart or lungs to perform their functions, the remedial efforts usually employed in such cases would be indicated, but the writer has never had occasion to resort to such means, as he has had no accidents with gas. Very nervous patients sometimes give a little trouble, in that they are not quiet during the narcosis and require to be held by the assistants.

Gas should never be administered to an alcoholic patient, and alcohol should not be allowed prior to the administration, as the patient is very liable to become disagreeably unmanageable.

In organic lesions of the heart, lungs, and kidneys, gas can be given with comparative safety when other anæsthetics would be contraindicated. The extent of the lesion, of course, would modify this statement.

The occasional cyanotic appearance of a patient might alarm a novice, but there is no occasion for anxiety, and the gas need not be pushed to that extent.

MORNING DIARRHŒA.

In the *Medical Record* of May 11, 1895, DELAFIELD states that he treats this condition as follows:

If the disease occurs in women, before beginning any medical treatment it is important to have cured any lacerations of the perineum or the cervix, displacements of the uterus, or disease of the Fallopian tubes which may exist. The methods of treatment which are ordinarily employed are:

1. *Change of Climate.*—The effects of this are often very satisfactory and in the milder cases very prompt. A person who has a morning diarrhœa for months may leave New York in the afternoon and the next morning begin to have formed passages. Unfortunately, a return to the city may be followed by a return of the diarrhœa. In the more severe cases a prolonged residence in a dry inland climate may effect a cure.

2. *Diet.*—The plans of diet usually followed are: (*a*) an exclusive diet of milk; (*b*) an exclusive diet of beef and hot water; (*c*) a diet composed of milk and meat alone; (*d*) a diet from which only the sugars and starches are excluded.

As regards the effects of treatment by diet, we find that some patients are cured, some are benefited for a time, in some there is no effect at all, some get worse.

3. In a small number of cases the diarrhœa can be cured by daily lavage of the stomach.

4. *Drugs.*—As a rule, the number of the passages can be checked for a moderate length of time by the preparations of opium. The improvement only lasts while the opium is taken, and it is evident that the use of this drug ought not to be continued for any length of time. The subnitrate of bismuth, the subgallate of bismuth, and β-naphtol bismuth are said to give good results. The writer has not been very fortunate with them. Salol and naphtalin answer well in some cases, but have absolutely no effect in others. Arsenic, qui-

nine, ipecac, belladonna, and cannabis are all very useful drugs. The drug which has given him the best results is castor oil, in doses of from 5 to 10 drops.

SULPHIDE OF CALCIUM AS A PROPHYLACTIC OF INFLUENZA.

Dr. J. Sinclair Coghill has contributed a valuable paper on the prophylaxis of influenza by means of a large daily dose of quinine, which is undoubtedly one of the most valuable methods of treatment; but knowing that it is not every one who can take quinine, the author resolved, when the first epidemic visited England, to try a daily dose of 1 grain of sulphide of calcium. All his household took it, with the exception of two servants, who, for some reason or other, did not, the result being that all escaped with those two exceptions.

The next year, when the epidemic again broke out, the writer asked the authorities of the Isle of Wight Railway to supply all their employés with the pills, and all who took them regularly escaped. The manager of the Central Railway also asked me to supply his men with them, and he afterwards informed me that, so far as he could ascertain, none of the men who had taken the pills regularly had had influenza.

During the next outbreak the pills were again given, with like results; but on the Isle of Wight Railway they were not given out to each workman as formerly, consequently but few took them, and the result was that a large number of influenza cases occurred among those who had not used the remedy.

During this epidemic the writer also had an attack, from having neglected to take the medicine until a day or two after the symptoms appeared.

He can certainly speak from much experience of the efficacy of this remedy, having ordered it to numerous patients with the most satisfactory results.

It takes about three days before the system becomes sufficiently saturated with the drug to prevent infection; therefore it is rarely of use to those who have already been exposed to it, though even then it appears to modify the attack. When a case appears he believes the 5-grain dose of quinine to be more rapid in its action than the sulphide of calcium, and therefore safer to give, but should afterwards carry on the effect with the sulphide of calcium, which is equally efficacious and much easier for many to take, as it never appears to disagree in any way, although continued regularly for many weeks.

He had a case of influenza a few days ago in a patient who had been taking 12 grains of quinine regularly every day for some weeks, and he has also seen it occur in others who have been taking daily doses of simple sulphur, with the idea of preventing influenza. Its *modus operandi* is probably that it renders the blood unfit to receive and support the influenza bacillus.—*British Medical Journal*, May 4, 1895.

TREATMENT OF HEART-DISEASE.

Bramwell contributes a valuable paper on this topic to the *Edinburgh Medical Journal* for May, 1895. He briefly sums up his experience as to some of the individual measures and remedies which he has found personally useful in the treatment of cardiac cases, but he does not touch upon the details of diet, general hygiene, and change of scene.

In many forms of cardiac disease rest is the most important means of treatment which we possess. Rest (more or less complete or absolute, as the special peculiarities of the different forms of disease and the individual peculiarities of each special case seem to demand) is indicated in the following affections: acute endocarditis; myocardial degenerations of all forms (fatty, fibroid); in all cases in which there is reason to suspect myocarditis, whether acute, subacute, or chronic; pulmonary lesions with an engorged condition of the right heart; aortic regurgitation when the compensation begins to fail; valvular lesions with decided break down of compensation; cases of angina pectoris in which there is reason to suspect organic disease; aneurisms of the thoracic aorta and large blood-vessels; and all severe cases of senile degeneration of the heart.

Exercise is a very valuable means of treatment in many cardiac conditions, more particularly in neurotic affections, fatty infiltration, many gouty conditions in which there are no marked degenerative changes and arterial lesions, many valvular lesions so long as the myocardium is fairly healthy, some dilated conditions of the heart in which the dilatation is associated with fatty infiltration, or the result of such conditions as excessive beer-drinking, and in which it is not associated with any marked degree of myocardial degeneration. In many cases of aortic and mitral disease, in the less severe forms of senile heart, and in the slighter forms of myocardial degeneration, judiciously regulated and moderate walking

exercise is invaluable, so long as the compensation is well maintained.

By muscular exercise we are enabled to promote the condition of the general health and of the cardiac health, to hasten the circulation through the peripheral organs and through the heart itself, and to prevent stasis and engorgement with all their disastrous results. So long as exercise does not produce marked shortness of breath, overfatigue, or other untoward symptoms, it should not only be permitted, but encouraged.

Graduated and systematic muscular exercise, such as is afforded by Oertel's plan of treatment, is chiefly useful in cases of fatty infiltration, fatty and gouty conditions unassociated with atheroma and without any marked degree of high pressure in the peripheral system of vessels.

Of Schott's method of treatment the writer has no direct personal experience, but from what he has learned from the experience of some patients, he is disposed to think that it will be found to be chiefly valuable in the same group of cases (fatty infiltration, flabby hearts, etc.), and in those cases of valvular lesions in which the cardiac muscle is reasonably sound.

The mental tone of the patient should be sustained; he should be encouraged to hope (unless, of course, there is good reason to the contrary) that the treatment will be attended with success. In many cases of cardiac disease there is no tonic which is more efficacious than a favorable opinion confidently expressed; it is especially valuable in neurotic cases and in all forms of functional disease, and in the less severe forms of valvular lesion in which the valvular defects are well compensated, or in which the organic changes in the heart are associated with a nervous and irritable condition.

Iron is an invaluable remedy in those forms of cardiac disease in which there is a deficiency of hæmoglobin. The form of iron most efficacious, in the author's experience, is Robertson's Blaud's pill capsules.

Arsenic is a most valuable cardiac remedy. It is especially useful in cases of myocardial degeneration (fatty and fibroid conditions of the myocardium) and in neurotic cases; it is also most useful in many cases of angina pectoris. It is a most valuable cardiac tonic in many cases of valvular disease in which there has been any decided break-down of compensation, particularly, perhaps, in cases of aortic regurgitation.

Strychnine he considers one of the most useful cardiac remedies we possess, both for the purpose of producing a sustained tonic effect and more active stimulation. It is very valuable in many cases of valvular disease before there has been a decided break-down of compensation, and during temporary break-downs of compensation in which there are bronchial or other pulmonary complications, more particularly when given subcutaneously in frequently repeated doses, with or without inhalations of oxygen. In the same conditions he often combines it with digitalis or strophanthus.

Digitalis is the cardiac tonic which is most largely employed by him when symptoms indicative of failing compensation develop, both with the object of producing immediate and temporary effects, tiding the patient over acute complications, and also of permanently sustaining the cardiac power and preventing further break-downs of compensation. It is most useful in mitral lesions, especially mitral regurgitation with dropsy, irregular pulse, scanty condition of the urine, etc. It should be given more cautiously and for shorter periods of time in cases of aortic regurgitation, and cannot be expected to produce such satisfactory results in such cases as in those of mitral regurgitation. Digitalis is not unattended with risk in fatty conditions of the cardiac muscle. He has seen at least one case of fatty degeneration of the heart in which rupture had occurred during a course of digitalis, and in which he was inclined to think that the rupture was the result of the administration of the remedy. He rarely, if ever, gives it in chlorotic cases, or in cases in which he has reason to suspect that there is a decided degree of fatty degeneration due to disease of the coronary arteries; on the other hand, he found it of great use in some cases in which grave cardiac symptoms seemed to be the result of a degenerated condition of the myocardium, and in which the degeneration was, so far as could be judged, the result of chronic myocarditis or fibroid degeneration. Reserve must, however, be maintained on these points, for, as every one knows, it is often most difficult, and sometimes impossible, to form an opinion as to whether myocardial degeneration is due to fatty degeneration or interstitial changes and chronic myocarditis. Where the pulse tension is high, strophanthus should be given in preference to digitalis. Under such circumstances, if digitalis is given, it should be combined with iodide of potassium, salicylate of sodium, or some remedy, such as nitro-glycerin, which reduces blood-pressure.

He always gives digitalis in the form of tincture or infusion. Digitaline granules are not

employed; he has over and over again seen in consultation decidedly poisonous symptoms produced as a result of the administration of Nativelle's granules. The more soluble liquid preparations are quite sufficiently powerful for any purpose which is required, and are much more easily handled and managed.

The writer has had less experience with strophanthus than with digitalis, but he has seen some very brilliant results produced by its use. Guided by Professor Fraser's observations, he usually prescribes it in preference to digitalis in those cases in which the peripheral arterial pressure is increased. His experience agrees with that of Professor Sir Grainger Stewart, that it is of great value in those cases in which it is desirable to produce a rapid tonic and stimulating effect. In such cases he often combines it with subcutaneous injections of strychnine, and, in those in which there are grave pulmonary and bronchial complications, with inhalations of oxygen. Strophanthus is also useful in some cases in which digitalis, owing, perhaps, to some idiosyncrasy of the patient, disagrees,—in those, for example, in which digitalis vomiting is produced.

Alcoholic, ammoniacal, and ethereal stimulants are, it is unnecessary to say, of great use for the purpose of relieving urgent symptoms and warding off asystole. In those cases in which there is vomiting, brandy and champagne are the most useful forms.

Many persons who are suffering from chronic cardiac disease, and who have all their lives been accustomed to the use of alcohol, are the better for a strictly moderate amount of alcoholic stimulant; in many cases of this kind alcohol seems to help digestion; as a rule, whiskey, well diluted, is given with meals. In functional and neurotic cases Burgundy is often a useful form of wine.

Oxygen inhalations are of the greatest use in many very urgent conditions, especially where there is bronchitis, pneumonia, or pulmonary apoplexy.

Iodide of potassium is an invaluable remedy in aneurism and in many cases of angina pectoris. In combination with digitalis it is a most important remedy in some of the so-called cases of senile heart. It has also seemed to be useful in some instances in which there appeared to be chronic myocarditis or fibroid degeneration. In some cases in which cardiac lesions or symptoms were associated with symptoms or signs of tertiary syphilis, iodide of potassium has seemed to exert a beneficial effect upon the cardiac condition.

Salicylate of sodium is another remedy which the writer has prescribed largely in gouty cases with associated cardiac symptoms, from which great benefit has resulted.

Nitro-glycerin and nitrite of amyl are the remedies which he chiefly uses with the object of producing a rapid lowering of the blood-pressure. So far as his experience goes, they are more reliable and safer drugs than nitrite of sodium.

Menthol, given in combination with aromatic spirits of ammonia and spirits of chloroform, is a most useful remedy in many cases of flatulent distention of the stomach,—a condition which is often the cause of cardiac embarrassment, and sometimes of sudden, alarming, and in some cases fatal, nocturnal dyspnœa, with or without angina pectoris. He usually gives 1/6 or 1/4 grain of solid menthol dissolved in 1/2 drachm of spirits of ammonia and 1/2 drachm of spirits of chloroform for a dose.

Purgatives are most useful in many cardiac affections, especially in mitral cases attended with dropsy, and in cases in which the right side of the heart is overdistended and embarrassed and the organs and tissues engorged and waterlogged.

Beneficial effects can in many cases be obtained by the removal of dropsical fluids from the internal cavities. He has obtained very satisfactory results by frequently repeated tappings in some cases of ascites due to organic cardiac disease, resulting hepatic cirrhosis, and portal engorgement. In cases of hydrothorax the results have, as a rule, been merely temporary and often unsatisfactory. He rarely resorts to puncturing the dropsical legs or scrotum, either by simple puncture or by means of Southey's tube, until other measures have failed to remove or lessen the œdema. Consequently, in his experience, draining the subcutaneous tissues has comparatively rarely been attended with any marked or lasting benefit.

Massage is a more useful remedy than tapping in many cases of subcutaneous dropsy; it aids the venous and lymphatic return, and quickens the circulation in the muscular and peripheral tissues of the body. It is also of great use in many cases in which ordinary muscular exercise is contraindicated.

Venesection is undoubtedly valuable in many cases in which the right heart is greatly overdistended and engorged, and is particularly useful in those cases in which the engorgement depends upon temporary lung complications superadded to mitral disease.

Dry cupping is often most useful for the relief of congestion of the lungs and other pulmonary and kidney complications.

The soporifics which he finds chiefly useful are chloralamid, paraldehyde, and morphine. In cardiac cases sulphonal is much less certain in its action than chloralamid. He has almost entirely abandoned chloral hydrate in grave cardiac disease on account of the marked depression which, under such circumstances, it is apt to produce. Paraldehyde is especially useful in those cases in which there is associated bronchitis; in other words, in those in which morphine is contraindicated. After the break-down of compensation, and in the ultimate restlessness of cardiac disease, small and frequently repeated doses of morphine are often invaluable. He has seen the administration of the remedy attended with marked benefit, even in those cases in which the urine is albuminous. On the whole, morphine is by far the most reliable sedative and soporific. It is an invaluable remedy in some cases of angina pectoris in which nitrite of amyl fails to give relief or is contraindicated,—those, for example, in which the blood-pressure is low and in which there is associated free aortic regurgitation. Morphine should never be given in those cardiac cases in which there is œdema of the lungs or much bronchial secretion. He has seen very disastrous results from its administration under such circumstances.

EXTERNAL APPLICATIONS OF GUAIACOL AS AN ANTIPYRETIC.

BLAISE (*La Presse Méd.*, April 10, 1895) draws attention to the antipyretic action of guaiacol following its absorption through the skin. It appears from the experiments of Linossier and Lannois, made with crystallized synthetic guaiacol (alpha), that this action is due to the absorption by the skin of the vapor of the medicament. The guaiacol (not more than thirty grains) is liquefied by gentle heat in a test-tube, and painted with a small brush over the breast of the patient. The area painted is then immediately covered by adhesive gummed or rubber plaster. In fifteen minutes the taste of guaiacol will be perceived by the patient, and the temperature quickly falls from 1° to 3° F., slowly ascending again to its initial point in the course of five hours. The cases in which it is particularly indicated are those of pulmonary tuberculosis with febrile attacks; it can also be used in typhoid fever, erysipelas, etc. In pleurisy, 45 grains of guaiacol dissolved in 6 drachms of tincture of iodine may be applied in the same way, two applications in the twenty-four hours.—*British Medical Journal*, May 11, 1895.

ON THE TREATMENT OF ACUTE PNEUMONIA BY ICE-CRADLING.

BLAIKIE SMITH reports his experience with this method in the *British Medical Journal* of May 11, 1895.

The subject first attracted the writer's attention about two years ago, when Dr. W. Soltau Fenwick reported most encouraging results following the adoption of certain antipyretic proceedings in cases of acute sthenic pneumonia; but of one hundred and eight cases treated by sponging or ice-cradling, the mortality amounted to ten per cent., while the death-rate in five hundred and fifty-two cases treated in the ordinary way reached twenty-three per cent.

During the past two months he has had under his care in the Aberdeen Royal Infirmary five cases of acute pneumonia, and all of these have been treated, almost exclusively, on the lines recommended by Dr. Fenwick. All the patients recovered.

The mode of carrying out the treatment is practically identical with that described by Dr. Fenwick. The patient, clothed in a cotton night-dress, is placed in bed, with a sheet covering the mattress. Over the body and legs are arranged two large cradles, extending from the shoulders to the feet. To the arches of the cradles are attached six or eight small pails filled with ice; a thermometer is suspended from the centre of the upper cradle, and both the cradles are covered, first with a blanket, secondly with a water-proof, and lastly with the ordinary coverlet. The ice-pails are recharged as the ice melts (usually about every two or three hours). The temperature of the air under the cradles, as well as that of the patient, is ascertained at regular intervals, and the treatment is maintained until the temperature becomes normal.

All the cases treated on the above plan were examples of acute sthenic pneumonia occurring in men whose ages ranged from thirty to forty; the whole of them were complicated with pleurisy, and in one instance the pneumonia was double.

With the view of avoiding wearisome repetition, the writer records only two of these cases. In every instance he kept a temperature record of the ward, the air under the ice-cradles, and the patient's body temperature every four hours. He also determined the temperature of the air under the blankets before the cradles were placed in position and after they were withdrawn at the termination of the case,—that is, the temperature of the bed when prepared in the ordinary way,—and, finally, he ascertained the temperature under the cradles

before the ice-pails were suspended, and observed what effect was produced on this temperature after ice-cooling had been fairly established.

The first case is that of a man, aged thirty, who was admitted into the infirmary on the fifth day of his illness. He was suffering from inflammation of the whole of the left lung, complicated with pleurisy. His pulse was 106, his respirations 41, and his temperature almost reached 103° F. In this case, before antipyretic treatment was commenced, the temperature of the air under the blanket was 88° F. After four hours' simple cradling it fell to 72° F., after four hours' ice-cradling it went ten degrees lower, and thereafter during the maintenance of the treatment it oscillated between 60° and 70° F. until the eighth day, when crisis occurred, and the treatment was discontinued. Soon after the removal of the cradles the bed temperature rose to 81° F. With reference to the effect of the treatment on the body heat, no marked depression was observed. The temperature gradually and in a somewhat fluctuating manner declined, the fall becoming more rapid as the crisis approached. The pulse- and respiration-rates and their ratio to each other seemed practically unaffected by the treatment.

The second case is also that of a man, who was admitted on the fourth day, suffering from pneumonia of the apex of the right lung complicated with pleurisy. At the commencement of this case the bed temperature was, unfortunately, not ascertained; but after the cradles had been in operation for two hours (without ice) the bed temperature stood at 80° F., the body temperature being 105.4° F. The pails were then filled with ice, and in two hours more the bed temperature had fallen to 73° F., but there was no material alteration in the body temperature. For the next few days—until the eighth day, when crisis took place—ice-cradling was maintained, with the result that the bed temperature fluctuated between 74° and 65° F., and at the end of that time, the cradling having been discontinued, the thermometer under the blankets registered 87° F.

In this case the effect of the treatment on the body heat was not at all evident. On the afternoons of three successive days the thermometer rose to over 105° F., elevating the cradle temperature along with it; but it finally fell rapidly, on the eighth day of the disease, to the normal figure. With regard to the pulse- and respiration-rates, the influence of the ice seemed more apparent, for, with a temperature of 105° F., the pulse was only 100 and the respirations ranged between 30 and 35 a minute.

On looking over the records of these cases—we refer to the whole of them—he is unable to discover any marked signs of improvement following the complete establishment of the treatment. There was no sudden fall of temperature, such as one meets with after the cold bath or after the administration of an antipyretic drug. But though there was no decided reduction in the temperature, the pyrexia (even in one case where both lungs were extensively involved) did not attain a great height, and it is, therefore, probable that the treatment exercised a restraining influence on the body heat. The pulse and respirations also seemed to be under restraint, for the heart's action was in no case unduly rapid or weak, and the breathing was never a source of anxiety.

The patients, as a rule, expressed themselves as feeling comfortable under the treatment. One or two of them, however, complained of cold feet, and in these cases short stockings were permitted to be worn. In one patient inordinate perspiration was a marked feature, but the discomfort arising from this symptom at once disappeared with the establishment of the ice-cradling. In the earlier cases some inconvenience was experienced from the accumulations of moisture on the outside of the pails dropping on the patient's body and bed, but this was easily remedied by clothing the pails in flannel.

With regard to the means by which the antipyretic results were brought about, it seems that a twofold influence was at work,—the influence of the air under the cradles and the influence of the ice-pails. The temperature under the blankets was materially reduced after simple cradling had been established, and the thermometer became still further lowered on the introduction of the ice-pails. It is doubtful which of the factors was the more powerful. It is probable that the lowering of the temperature produced by the cradles was greater than that following the melting of the ice, but possibly this opinion may be modified by future experience, for in the next case of pneumonia the writer intends to make more careful observations on this point, using pails of different capacities and varying their number.

On the whole, though fully alive to the fallacies that attend conclusions based on a small number of cases, the author is disposed, from what he has seen of the proceeding, to recommend ice-cradling as a mild form of antipyretic treatment suitable for sthenic cases of acute pneumonia, easy of application, not violent in

its effects, comfortable and not fatiguing to the patient, and capable of being carried out in any disease where a restraining influence on pyrexia and its attendant symptoms is desired.

SERUM TREATMENT OF CARCINOMA.

EMMERICH and SCHOLL (*Deut. Med. Woch.*, April 25, 1895) relate their clinical experience of the treatment of carcinoma with erysipelas serum. They first refer to Coley's researches into the treatment of inoperable tumors, both carcinoma and sarcoma, with bouillon cultures of the erysipelas coccus inoculated with bacillus prodigiosus. In addition to the favorable results obtained by Coley, there were some unpleasant by-effects. The authors inoculate sheep with erysipelas cultures and free the blood-serum from micro-organisms by filtration. They have treated a number of cases of carcinoma (and sarcoma) with this serum during the past half-year. In only two cases were there no results, and here there was secondary infection with suppurative changes in the carcinoma. Details are then given of six mostly advanced and quite hopeless cases; four of these were examples of recurrent mammary carcinoma, another of rapidly growing and inoperable mammary carcinoma, and a sixth of long-standing cancroid. 1. A recurrent mass was present in the scar as well as carcinomatous glands in the axilla, and the whole of the infraclavicular space was infiltrated with growth. The masses in the scar and axilla disappeared under the treatment, and the improvement was such that the patient could move her arm. 2. The hard masses about the scar disappeared, but a larger mass did not become less before the treatment had to be unavoidably suspended. 3. There was an ulcerating mammary carcinoma with metastases. Several of the masses became less and the general condition of the patient greatly improved. 4. A metastasis in the upper arm disappeared in another case. 5. A large and rapidly growing mass of carcinoma in the breast and axillary glands rapidly became less. The mass in the axilla diminished to half its original size in fourteen days. 6. Great diminution in size occurred in a cancroid in the face. The author thinks that the action of the serum is efficient and specific; it is probably even more efficient in sarcoma than in carcinoma. It cannot yet be decided whether it acts on all forms of carcinoma. The younger the carcinoma the better the results, but older carcinomata soften and become absorbed. The amount of the injection must depend on the size of the growth and the condition of the patient: 1 to 4 cubic centimetres of the serum injected daily into the growth suffices for small tumors; 10, 15, 20, or 25 cubic centimetres may be injected into a large tumor. No pain was noted with the smaller injections, and in no case was it necessary to give up the treatment on account of pain. There was usually no fever. The action on the general health was remarkable. A pseudo erysipelas was sometimes noted, lasting from twenty-four to forty eight hours. The serum should be used not only in inoperable and hopeless cases, but, injected before operation, it should complete the work of the surgeon, preventing recurrence. The authors say that thus surgery and internal medicine will assist each other. They draw attention to the difficulties and expense in preparing the serum, and the object remains to make the serum as powerful as possible. This method of treatment is in its infancy, and further clinical investigation is much to be desired.—*British Medical Journal*, May 11, 1895.

POLYMORPHIC EXCRESCENCES OF THE MARGIN OF THE ANUS.

BODENHAMER (*New York Medical Journal*, June 29, 1895) states that the surgical operation for the removal of these vegetations is so very simple that it scarcely deserves the name. It is important, however, in performing it, not to include too much of the integument surrounding the anus, for, if the cuticle is too much encroached upon, stricture of the anus will be the result. The operation is performed by seizing each excrescence with a small forceps, drawing it out slightly, and snipping it with a scissors curved on the flat or with the knife, and then dressing the cut like any other fresh wound.

It is important and essential in treating this affection to endeavor to discover the primary cause of it, and to treat or remove that, together with the effect, at the same time; for, after the removal of the excrescences, the cause which produced them, still existing, may again cause them to appear. When the anal excrescences coexist with internal hemorrhoidal tumors, by the removal of these the excrescences sometimes spontaneously disappear, as the writer has observed in several cases of the kind.

The medical or curative treatment of the hemorrhoidal disease is scarcely ever mentioned or alluded to by authors; their whole attention seems to be directed to the

surgical treatment of the hemorrhoidal tumors, which are not the disease, but the mere offspring or offshoot, as has been shown; so that, by removing the tumors alone, the morbid blood-vessels which produced them would still remain to repeat them. Some of the rectal specialists, however, say positively that, by removing the tumors alone by knife, ligature, or Smith's clamp, the cure is radical. But, in order to make the cure radical by surgery alone, the morbid blood-vessels must also be removed, either by knife or scissors, or both; such operation is now advised and performed by a few, and, however bad it is, it at least is consistent, in that it removes both the cause and the effect at the same time.

The writer not only believes, but knows, that the hemorrhoidal disease can be cured medicinally either before or after tumors have formed; but when they coexist it is all-important that the tumors should be removed surgically by either ligature, knife, or clamp, unless the successful treatment of their primary cause should have resulted in their removal.

The principal indication in the medical or curative treatment of this disease is to restore the lost tone and activity of the morbidly relaxed, debilitated, and engorged vessels, and, inasmuch as these cannot unload themselves by reason of their asthenic state, they should be assisted to do so by the exhibition of such internal medicines as will tend to increase their contractile power and action, and thus enable them, sooner or later, to force out their superfluous contents, as well as to prevent any undue quantity of fluids from entering them. To fulfil this indication we have in belladonna, aconite, nux vomica, and ergot valuable remedies, if properly directed, as the writer can testify; he has also used the iodide of potassium in large doses with equal success in the cases of the peculiar internal hemorrhoidal tumors, which very much partake of the nævoid structure and resemble erectile tissue, and have been denominated "aneurisms by anastomosis."

Sometimes the vascular engorgement of the veins and capillaries is the result merely of a neurosis, and when this is the case the rational treatment should, of course, consist in the restoration of the nervous energy and of the proportionate calibre of these vessels.

One of the therapeutic measures which the writer has employed for a number of years with excellent results is dilatation of the anus and anal canal by the use of bougies of different sizes once or twice daily. If this treatment is judiciously executed before extravasation and organized tumors are formed, it may prove the means of destroying the morbid condition of the blood-vessels and overcoming any undue contraction of the anal sphincters, and thus prevent the further progress of the disease. The influence of the bougies in removing the morbid sensibility and in relaxing the rigidity of the sphincters, as well as facilitating the return of the blood from the turgid, congested, and varicose vessels, is often surprising, and if torpor of the rectum and obstinate constipation obtain, conditions not unusual in such cases, this treatment soon induces a natural action of the bowels, an object so very desirable in such instances.

The writer concludes by remarking that the medical treatment, including prophylaxis, should never be neglected, even if the disease is attended by tumors; when such, however, are present, then it may be absolutely necessary to remove them surgically, and for this purpose some prefer and use the ligature, which has been the method of the writer for half a century, others use the knife and scissors, while others again use Smith's clamp and cautery, or the écraseur. Each of these methods finds advocates among able and distinguished medical men, and, as they are now valued, no one should be censured for electing either one or the other, for to each must be granted equal rights, as these operations now rank in the profession.

TREATMENT OF DIFFUSE PERITONITIS RESULTING FROM APPENDICITIS.

McBURNEY (*Medical Record*, March 30, 1895) reports twenty-four operations in cases in which the protecting wall was either entirely absent or more or less incomplete. The following is the plan of treatment he adopts: the incision is large (from four to five inches), made as near to the anterior spine of the ilium and the outer part of Poupart's ligament as possible. After opening the peritoneum, every effort is made to remove at once with sponges all fluids in view. Then the appendix is sought for, removed, and the stump cauterized. The character of the case has, of course, by this time been appreciated, and the fact noted that either no adhesions exist, or that they are imperfect, or, having existed, that they have given way and the abscess has ruptured into the peritoneal cavity. Search has then been made for further collections of fluids, the pelvis being usually examined first, unless this has been clearly walled off by adhesions. Rarely has he deliberately broken such wall, and only when tenderness at another point, or other

sign, has led him to suspect secondary formations. In most cases the pelvis is found filled with a sero-purulent, often offensive, fluid. Cautious search is made for similar accumulations in other regions, a small sponge on a handle being carefully pushed first in one direction, then in another. When all purulent products have been sponged away, the washing with sterile salt solution, as hot as can be comfortably borne by the hand of the operator, is to be done. This solution is poured out of a pitcher or glass flask into the pelvis and then sponged out again. The same washing is done in the right loin and then in any direction where septic fluid has been detected. The pelvis is then sponged dry and a glass drainage-tube introduced; a piece of gauze is placed in the tube and another slip usually passed close beside the tube and also to the bottom of the pelvis. If the loin is suspected, another slip of gauze is placed as far up as the kidney. If the general cavity towards the median line has been involved, the packing is introduced in strips from three to six inches beyond the wound in various directions among the intestines. Finally, the wound surrounding the stump of the appendix is widely packed with gauze; no suturing of any kind is attempted; over all a large mass of dry sterilized gauze and cotton is bound with a firm, broad roller. ½ to 1 ounce of whiskey is administered by enema and a hypodermic of morphine and atropine given. Nutrient and stimulant enemata are sufficient for one or two days.

Of the twenty-four cases recorded, fourteen recovered and ten died. Besides these, quite a number of others were brought to him for operation, or he was called to them, which were in too hopeless a condition to justify interference.

ACUTE INTESTINAL OBSTRUCTION.

BARTON, reviewing this subject, lays down the following rules in the treatment (*Mathews's Medical Quarterly*, July, 1895):

The medical treatment amounts to nothing; it consists in washing out the stomach, kneading the abdomen, inverting the patient, and giving enemata of air, gas, or water. It is rarely successful, exhausts the patient, wastes valuable time, and occasionally ruptures the intestine. In but few of the cases he has seen would there have been the slightest hope that reduction would follow any of these methods; and even in those less damage would have been done by a clean incision made early.

If these medico-mechanical methods are tried and are not immediately successful, the abdomen should be at once opened; this procedure should under no circumstances be delayed after the appearance of coffee-ground vomiting. When acute obstruction is suspected, all preparations should be at once made for the operation, so that the moment the diagnosis is unmistakable there may be no delay whatever; it ought to be usually done within twenty-four hours of the appearance of the symptoms.

If the location of the obstruction is known, the most convenient incision is made; if not known, a median incision just below the umbilicus and large enough to introduce the hand is employed. If the seat of the trouble be not at once evident, the head of the colon is sought. If this be distended, the obstruction is in the large intestine and is readily located; if it be not distended, the collapsed ileum is rapidly passed through the fingers until the seat of the difficulty is found. If the obstruction is due to a band, it should be removed close to its attachments, so that it may give no further trouble. When it is due to an adherent appendix or Meckel's diverticulum, the cause should be entirely removed. In strangulation through slits or apertures it is well to close the abnormal opening after the gut has been reduced. If the strangulated gut be gangrenous, it should be removed and an artificial anus made; an anastomosis operation may be performed later, if the patient survive. In acute obstruction the patient is never in a condition to have the shortest anastomosis operation performed at the primary operation.

A volvulus must be untwisted and an intussusception reduced. If reduction is impossible, an artificial anus must be made above the obstruction.

If, after we remove an obstruction, no matter what its nature, the bowel be greatly overdistended, it must not be left in this condition, but must be emptied, even if we have to puncture it for the purpose or establish an artificial anus.

If the patient is in extreme collapse, with a rigid, distended abdomen, operation should not be refused. No anæsthetic should be given, as it is apt to provoke fatal fæcal vomiting; heat and strychnine should be freely used. A short median incision below the umbilicus should be made, just large enough to permit a finger to enter and bring out the first distended loop of bowel that presents itself; an artificial anus should be made at once.

If the patient is to be sent to a city hospital, wash out the stomach and give stimu-

lants, use strychnine hypodermically, put the patient on a stretcher and surround him with artificial heat; send a short, plain history; telegraph surgeon, so that the ambulance may meet the train and there be no delay when the patient reaches the hospital.

TREATMENT OF GASTRO-INTESTINAL CATARRH.

During the acute attacks of this disease the best treatment, according to COYLE (*American Medico-Surgical Bulletin*, 1895), is liquid food or very light diet, excluding meat, adding digestives, if necessary, and saline enemata of warm or cold water, preferably cold, with morphine internally, to relieve pain. Counter-irritation for pain is useless. The strength of the enemata may be varied from two drachms to an ounce of borax, bicarbonate of sodium, or salt to the quart of water. Enemata should be given night and morning, and repeated whenever the patient feels a desire for movement of the bowels. These enemata serve to cleanse the rectum thoroughly of shreds and mucus and prevent the accumulation of foreign matter, which will occur if the rectum is not washed out. A purge—preferably a saline—should be given at the commencement of an acute attack. The watery movement caused by a saline purge assists in detaching the membrane, and relief soon follows. The citrate of magnesium, Rochelle salts, or the always reliable sulphate of magnesium may be employed for this purpose. Heat to the abdomen for relief of the pain is of little use. It may serve to impress the patient that something potent is being done for her, and, as these cases are generally impressionable women, moral effects must not be lost sight off. Rest in bed and quiet, in addition to the above measures, will shorten the acute attack. In the intervals between the attacks the diet must be restricted to those substances which give the patient no disturbances of digestion. Laxatives for the bowels, especially cascara in small doses, digestives, such as pepsin and pancreatin, whenever they appear to be necessary, and tonics for improvement of the general health constitute the only efficient means at our command to render life endurable for these cases. In spite of all treatment, the patient will from time to time suffer from fermentation in the stomach. Sulphite of sodium, in from 5- to 10-grain doses after meals, does more for this annoying symptom than anything else. With our present knowledge, the disease must be classed as one of the chronic incurable diseases that do not furnish much comfort to the medical attendant, except as affording an opportunity for experimental therapeutics.

FEEDING BY THE RECTUM.

In the *Cent. f. de Ges. Therapie* (quoted by *Mathews's Medical Quarterly*, July, 1895), SINGER gives the following directions for feeding by the rectum:

It is stated that the clinical value of rectal nutrition was established by Voit, Bauer, Von Eichhorst, and others. Egg albumin, with or without preliminary peptonization, is absorbed and assimilated by the mucous membrane of the large intestine. For direct absorption, milk is well suited. According to some, egg albumin is best when first mixed with salt (one gramme to the egg), though Ewald attaches no value to this, thinking that the peptonization is the most important. Better still is Huber's combination of the two methods: six eggs are mixed with six grammes of salt and two hundred cubic centimetres of a .15-per-cent. solution of HCl, containing five grammes of pepsin, and the mixture is kept for ten hours in the warm chamber. Of this mixture, nutrient enemata may be given twice daily. Rectal feeding is still insufficiently employed in practice, partly because it is sometimes disagreeable, partly also, perhaps, because this method of nutrition has not quite fulfilled the somewhat exaggerated expectations at first entertained of its utility.

Singer thinks that after hemorrhage from a gastric ulcer rectal feeding should be resorted to for some days. It diminishes the likelihood of a recurrence of the hemorrhage by doing away with the irritation caused by the presence of food and by giving the stomach physiological rest, with freedom from the peristalsis and hyperæmia accompanying digestion; it is at the same time a treatment for the troublesome vomiting of gastric ulcer, with or without hemorrhage. The nutrient enema should not consist of more than a quarter of a litre. Singer has practically kept to the mixture recommended by Boas, and uses one hundred and twenty-five grammes of milk and a teaspoonful of peptone; he sometimes adds a little grape-sugar. The mixture is well beaten up, and an ordinary enema syringe furnished with a soft tube is used to inject it. The nutrient enema may be given three or four times daily, at intervals of four to five hours. The rectum must be cleaned out with enemata before each nutrient enema is given, and neglect of this precaution is a common cause of symptoms of rectal irritation.

Singer recommends after each nutrient enema the administration of a suppository containing $\frac{15}{100}$ grain of extract of opium; when there is great tendency to tenesmus, 8 to 10 drops of tincture of opium with the other ingredients of the enema. It is very seldom that the enemata are not retained, but in this case the preparation of the mixture may be at fault; there may be too much salt, or an unsuitable ready-made peptone preparation may have been used. The patients with hemorrhage from gastric ulcer were kept in bed and nourished solely by the rectum for four to eight days.

Singer says that recurrence of the hemorrhage took place only when patients secretly took solid food before they were allowed. When there is much pain, a mixture containing subnitrate of bismuth and chloroform can be given by the mouth. Excessive feeling of hunger and thirst can be treated by a little opium (better than cocaine) and two hundred cubic centimetres of water (for thirst), but if the thirst be excessive, owing to diarrhœa, more fluid may be given. Singer also recommends exclusive rectal feeding to be tried in some cases of dilatation of the stomach, in some gastric neuroses, including excessive vomiting of pregnancy, and after some abdominal operations. In cases of typhoid fever he thinks that he has diminished the great loss of weight by feeding patients by the rectum, in addition to the ordinary feeding by the mouth. Enemata containing alcohol and tea may be useful in collapse during acute disease and where alcohol cannot well be administered by the mouth.

SUGGESTIONS IN RECTAL SURGERY.

The above is the heading of an instructive and able discussion on this subject by Mathews (*Mathews's Medical Quarterly*, July, 1895). In regard to treatment, he suggests the manner of this only in ulceration of the rectum. For a tuberculous ulceration there can be but one method to suggest. In the light of modern research it must be conceded that tubercular disease can have its origin or starting-point in any tissue. The lungs may be secondary, in this trouble, to any other portion of the body. The surgeon meets with a tuberculous knee-joint; he excises it; if with tuberculous bone, he removes it, not only for its local effect, but from the knowledge that a general infection can take place from such foci. Therefore, if a tuberculous ulceration of the rectum exists, it must be thoroughly curetted. General infection in a number of cases has been prevented by a full and complete curettement of the rectum. Of the syphilitic rectum nothing so good can be said. Whatever may have been the opinion of pathologists a decade ago, it must be agreed to-day, that if syphilis affects the rectum, it is by a secondary deposit; by a gummatous building-up process. This assumes a fibrous condition beyond the power of nature to reabsorb. We must, therefore, accept the ultimatum and do the best we can. The landmarks are plain enough and the physical signs sufficient to draw the diagnostic line between strictures from this cause and the other sources.

When a decided stricture exists it becomes a matter for surgical interference. What shall it be? Some writers deal with all serious ulcerations or strictures of the rectum in one of two ways surgically,—total excision or colotomy. The author is averse to both. If syphilis has affected the lower rectum and results in stricture, it certainly does appear advisable to divide or break the stricture and avoid the opening in the side. Especially is this true when we recognize that the process of infiltration is more or less self-limited, and that we have nothing to fear in the extension of the disease, except by the obstruction. A free proctotomy in such cases is much better than a colotomy. If a stricture, the result of syphilis, exists in the movable or the upper rectum, it is an ideal case for a colotomy. It is a localized condition without the power of extension; nature cannot reabsorb it, and obstruction results, which, to all intents and purposes, is purely mechanical. If it is dangerous to dilate, an opening can be made above and the patient live indefinitely. How different from a cancerous stricture! The destructive process goes on, ends in death, regardless of the colotomy. In cancer of the rectum, or cancerous stricture, one of the two methods mentioned—namely, total extirpation or colotomy—is resorted to. First, let us consider the propriety of total excision. With so many to recommend it, the writer feels diffidence in entering his protest against it. Kraske has designed a most excellent operation for the removal of the rectum. But when is the operation justifiable? There are two propositions submitted for argument in reasoning against this operation. First, Is the patient ever cured of the trouble operated for by said operation? Second, Is the patient ever materially benefited or relieved by the operation? No may be said to both propositions. First, it may be taken for granted that the only cause for which it can be said that total extirpation is advisable is malignancy. The author uses

this term as synonymous with cancer. We note that the characteristic features of malignancy are as follows: the disposition to grow, to ulcerate, to infiltrate, and to propagate. It is an aphorism well known in surgery, in cases of cancer, to "operate early if you desire success." All teachers, too, know how assiduously they teach the student to do a thorough operation and "cut wide of the mark" whenever dealing with this character of tumor. For instance, when removing malignant growths of the breast, how important it is, we say, to remove the glands in the axilla also! Again, how insidiously does a cancer invade the dividing line between a local condition and a general infection! Add to this the suspicion always that the tumor has probably propagated. These questions are difficult of solution, even when the growth is situated upon the external parts. How much more difficult when located in an obscure part of the anatomy, as in the rectum! Cancers found here are so stealthy in their growth, and in the invasion of tissue, that oftentimes the whole rectum is blocked by the mass, when only symptoms of constipation and some reflex pain are complained of. Tissues surrounding this portion of the gut are soft and easy of invasion, the blood circulation is great, the lymphatics are freely distributed. The contiguous parts are vital ones; the bladder, the peritoneum, the prostate gland, and the vagina in the female are all easy of invasion. By the time that a growth in the rectum has assumed sufficient proportions to be diagnosticated as cancer, many of these parts are already invaded by the process of infiltration. To dissect and draw down the rectum in the normal state may be comparatively an easy matter, but to completely dissect out a rectum that is so pathologically changed, as in a cancerous growth, is nearly an impossibility. Besides the difficulty of accomplishing its free dissection, it is one of the bloodiest operations ever attempted. Admitting that it can be done, what amount of good accrues to the patient? Infiltration is clearly proved by the amount of adhesion that is witnessed. Can we now "cut wide of the mark?" Every surgeon will probably concur in the opinion that, to make the operation complete, all glands in the inguinal region should be removed. But what about the infiltrated tissue left in and around the rectum? Then of what use is the operation? A bloody procedure, rectum gone, and infiltrated tissue left. Would any sensible surgeon dissect out a cancer in the breast and cover the wound with infiltrated flaps? Why, then, should a surgeon dissect out a cancer of the rectum and leave infiltrated tissue? If a growth of the kind is situated in the lower part of the rectum, of course it can and should be excised, for we take the precaution here to "cut wide of the mark." It may be said that after excision the patient lives for several years.

It must be a well-recognized fact that in the majority of cancers of the rectum located above the sphincter muscle pain is not a factor. It must also be admitted that, as a rule, these patients do not suffer from obstipation to any marked degree. Why, then, do a colotomy for the relief of pain that does not exist, or for an obstruction that oftentimes does not take place? No one will contend that by doing a colotomy cancer of the rectum is either cured or its progress materially stayed. If an obstruction does exist, and is within reach of the finger, it is much better to do a proctotomy than to open the side. It is a disgusting operation at best, promising very little, and should be avoided, if possible.

TREATMENT OF WARTY GROWTHS ON THE FACE.

In the treatment of warty growths on the face, CANTRELL usually freezes the part and removes the growth by the aid of the dermal curette. If the lesion is extensive, he advises the use of an ointment of salicylic acid (thirty grains to the ounce), and at the next visit, and two or three days later, he curettes the part.—*Philadelphia Polyclinic*, July 6, 1895.

METALLIC SUTURES IN FRACTURE OF THE PATELLA.

At the meeting of the Ontario Medical Association, held June 5 and 6, 1895 (*Dominion Medical Monthly*, vol. iv., No. 6), CASSIDY presented an interesting paper with the above title. After giving the history of a case of fractured patella, with complications, the doctor described the following method of applying sutures to the same. In performing the operation he claims to have devised an original method of introducing the wire sutures. After the holes are drilled opposite each other in the fragments of the patella, the silver wire is pushed down through one hole in the upper piece and an aluminum probe, with an eye in its point, is pushed through the opposite hole in the lower piece. When the silver wire appears in the gap between the two pieces, it is caught in the eye of the probe, deftly twisted, and the probe is then drawn back through the hole in the lower piece, carrying the suture with it.

If there should be any difficulty in pushing the silver wire through the hole in the upper fragment, it may be attached to the eye of the probe and pushed down to the gap; the probe is then detached from the wire, drawn back through the opening in the upper piece, introduced through the hole in the lower piece, reattached to the wire, and the operation finished as in the first instance. There can be no doubt that a really formidable difficulty in introducing the sutures is easily and rapidly overcome by the use of the flexible aluminum probe. The probe is of such a size that it passes easily through the holes made by the drill, and the soft cancellous tissue of the patella is not injured.

SOME POINTS IN THE TECHNIQUE OF KIDNEY OPERATIONS.

BRIGGS, in the *Nashville Journal of Medicine and Surgery*, vol. lxxvii., No. 6, sums up his views on the above subject as follows:

Kidney operations as performed in the past few years have yielded remarkably successful results when the important character of the organs so attacked is considered.

In nephrectomy the posterior method is preferable, because it is more easily performed; it is safer and better adapted to all cases requiring removal of the kidney, except when the organ is too large to admit of delivering it through the limited ileo-costal space.

Cystic endoscopy is a most valuable means of determining the condition of the two kidneys, and should be resorted to when the rational symptoms usually depended upon fail.

A most important point recently developed in the technique of the operation of nephrolithotomy is the method established by Henry Morris of lifting the kidney out of the cavity upon the loin, so as to allow of thorough examination for stone.

The other points established by the same surgeon are the readiness with which wounds of the kidney heal when sutured, and the fact that incision to reach the calculus in nephro-lithotomy should be made through the substance and not through the pelvis, as being less liable to be followed by urinary fistula.

OPERATIVE PROCEDURE FOR SPINA BIFIDA.

HOWITT (*Dominion Medical Monthly*, vol. iv., No. 6), at the meeting of the Ontario Medical Association, presented his conclusions regarding spina bifida in his preoperative experience. He describes his plan of operating, as follows: When normal skin covers the tumor, the outlines of the skin-flaps are traced on the surface of the tumor. After perforation of the skin, the probe-pointed blade of the scissors is introduced between it and the membranes of the sac, and the skin is divided. The flaps are now separated from the cyst down to the fascia of the back by the fingers or the scalpel-handle. By the same means the base of the tumor is parted from its loose attachment to the fascia beneath it till the pedicle is exposed. A prepared silk or other suitable ligature is tied as deeply as possible on the pedicle, and all external to it is removed. After oozing has ceased, the wound is closed and dressed; a pad of gauze is placed next the wound and covered with absorbent cotton, and the whole covered by a piece of oiled silk, the edges of which are sealed to the back with collodion to prevent the ingress of urine. If the tumor has been very large, drainage may be required. When part of the tumor has no cutaneous covering, the line of the primary cut for making the flaps should run into the skin at least a quarter of an inch from the margin. The patient should be kept at rest for two or three weeks. The essayist reported seven cases treated, four of whom are living. In only one case—an unfavorable one—was death attributable to operation.

THE SURGICAL TREATMENT OF HERNIA.

At the recent meeting of the American Medical Association, W. B. DE GARMO, of New York (*Medical News*, May 11, 1895), read a paper on "What Advance has been made in the Surgical Cure of Hernia?" After describing the Czerny operation of 1876, the Macewen operation of 1886, the McBurney operation, and, finally, the Halsted and Bassini operations of 1890, he outlines the results in each. He favors the Bassini and Halsted operations because the canal can be cleared of all foreign substances by these operations. Then repair begins at the internal ring, and the structures are restored to as normal a condition as possible. In his own operations he had found the following substances, which, if not removed, would have furnished strong predisposing causes for the recurrence of hernia: 1. Tough and thickened sacs; a persistent tube with a serous lining. 2. Good-sized bunches of soft fatty tissue, connected with the cord. 3. Lipomatous growths,—extraperitoneal. 4. Enlarged veins connected with the spermatic cord. 5. Masses of adherent omentum inside

the sac and in the vicinity of the internal ring. He also dwelt upon the desirability of removing portions of the omentum, and upon the necessity of tying every vessel large enough to be seen, without including any fat, in order to prevent the slipping off of the ligature and the consequent occurrence of hemorrhage. The author summed up his conclusions in the following propositions:

1. Asepsis has so far diminished the dangers that we are justified in performing a truly radical operation for the relief of hernia.

2. Any method that fails to remove all abnormal tissue, or that uses suture material quickly absorbed, invites failure.

3. The mortality has been reduced from eight per cent. to a small fraction of one per cent.

4. The time of confinement to bed has been reduced from three or four weeks to eight or ten days.

We cannot at this time speak with absolute certainty, but we have the best reason to believe that the number of permanent cures has been advanced from forty or fifty per cent. to at least ninety per cent.

TREATMENT OF BONE CAVITIES IN THE SHAFT OF THE TIBIA.

ERCOLE (*Archiv. di Orthop.*, an. 12, No. 2) has practised with success a new method of treatment for the filling of cavities left after removal of a sequestrum. The principle consists simply in removing the lateral parietes, and in reducing the superior and inferior extremities of the cavity to an inclined plane, so as to render plane the surface which was before concave, the greatest care being taken to preserve as much periosteum as possible. The periosteum is afterwards sutured together and a careful dressing applied, so as to exercise a graduated pressure on the parts. By this new method a mere linear osteo-periosteal wound is substituted for a large open surface. In four out of the six cases recorded union occurred by first intention in from fifteen to twenty days; in the other two cases, which were complicated by numerous old scars and fistulous tracts, union occurred by second intention in fifty-four and sixty-five days respectively. The posterior lamina of the tibia left is quite strong enough to support the limb, and all the more so since in these cases the bone is generally enlarged. The paper is illustrated by two colored plates. —*British Medical Journal*, June 29, 1895.

PROPHYLAXIS OF CYSTITIS FROM CATHETERIZATION.

GROSGLIK (*Journal of the American Medical Association*, May 25, 1895), seeking to explain the inability of physicians to combat vesical infection as a sequel to catheterization, remarks that the researches of Rovsing, Petit, and Wasserman have demonstrated that the urethra is the seat of a quantity of microbes having the power to decompose urine. During catheterization these microbes are carried to the bladder; hence the urethra is the first source of infection. The researches of Petit and Wasserman having demonstrated the impossibility of disinfecting the urethra, the author concludes that at present we possess no sure means of protecting the bladder against infection by catheters; if this does not follow, we are, judging by the present state of our knowledge, to regard it as chance merely. From five cases of his own the author asserts that the prophylaxis of instrumental cystitis consists in the regular evacuation of the bladder, since he has established the fact that stagnant urine is most favorable for the development of cystitis after introduction of an instrument. The following prophylactic measures are suggested by the author from his clinical study and the experimental researches of Rovsing and Guyon:

1. The introduction of instruments into the bladder ought to be made under the most rigorous aseptic rules in order to prevent the penetration of germs from the exterior into the bladder.

2. The use of hard metallic instruments should be avoided as far as possible, for they may produce lesions of the vesical mucous membrane, and thus favor microbic infection from the urethra; it is advisable to use Nélaton's catheter; metallic instruments only in cases of necessity.

3. If there is retention, the urine should be evacuated slowly and progressively; a sudden rapid emptying of the bladder may cause hyperæmia of the mucous membrane, thus considerably favoring inoculation.

4. These manipulations should be repeated at intervals not exceeding six hours; with re-establishment of the vesical functions the intervals may be lengthened.

5. In all retention, even if transient, catheterization is to be repeated if the first is not followed by a spontaneous evacuation within six hours.

6. If for any reason the systematic evacuation of the bladder, as pointed out in 4, cannot be carried out, we must use the catheter *à demeure*, which may be left in over night, or

constantly, according to circumstances. The very frequent use of this style of catheter in the author's cases shows him that it is a very efficacious means for combating infection of the bladder, and he agrees with Legeu, who observes, "The *sonde à demeure* becomes in the hands of the physician an antiseptic *par excellence* of the urinary organs."

INFLUENCE OF LAPAROTOMY ON TUBERCULOUS PERITONITIS.

Surgical intervention has profoundly modified the prognosis of tuberculous peritonitis within a comparatively short time. From recent statistics of Roerset it seems that of three hundred and eight patients operated on, 22.5 per cent. examined one year after the operation were perfectly cured. "We have cases cured for twenty-five years" (Spencer Wells). The cases were genuine tuberculosis in those of Buzy, Conitzer, *et al.* The bacillary researches and inoculations were positive. What is the process of cure? Stchegoleff, operating on dogs in Strauss's laboratory, concludes,—

1. Tuberculous peritonitis of dogs may be cured by laparotomy alone, and at the beginning of the process, twelve to fifteen days after inoculation.

2. Recovery is due to an inflammatory reaction characterized by infiltration of embryonal cells; the phagocytosis is the active development of connective tissue.

3. Curative action seems due to a variety of physical agents,—traumatism of the peritoneum, thermic influences, penetration of light and air into the peritoneal cavity.

4. The complete evacuation of the abdominal exudate is not the sole cause of recovery.

5. The dog is an animal somewhat feeble and very susceptible to tuberculosis if we use cultures of human tuberculosis.—*Journal of the American Medical Association*, May 25, 1895.

THE SURGICAL ANATOMY OF THE SPINE IN INFANCY.

Chipault and Daleine (*Rev. d'Orthop.*, May, 1895), in the course of a second paper on the surgical anatomy of the infant, direct attention to the following points: The spine of the fœtus and new-born infant, taken in relation to the whole length of the body, is longer than that of the adult, on account of the slight development in early age of the lower limbs. The relative length of different regions of the spine varies at different periods of life, while the relative proportions of the dorsal segment and the cervical and lumbar segments, taken together, vary but little during growth. The cervical segment, which at birth exceeds the lumbar segment, becomes relatively smaller with advancing age, until, in the adult, the latter is one-third longer. While in the adult the umbilicus corresponds to the level of the third lumbar spine, in the infant it is opposite to the fourth spine or even lower. The base of the sternum corresponds in the infant to the top of the seventh cervical spine, instead of, as in the adult, to the second dorsal spine. In the new-born infant the spinal cord descends but a little below the upper part of the spine of the first lumbar vertebra. While in infancy the lower limits of the cervical and lumbar portions of the cord vary but slightly from those in the adult, the lower limit of the dorsal portion corresponds to the eighth, and not, as in the adult, to the ninth dorsal spine. The cauda equina in the infant, instead of forming, as it does in the adult, a cylindrical mass which fills up the dural sheath, is arranged in two distinct processes, occupying the sides of the canal, and separated by an interval of from three to five millimetres in width, occupied by cerebro-spinal fluid. The spinal canal might thus be punctured in the third or fourth lumbar space in the infant without risk of wounding the cauda equina. Laminectomy, it is pointed out, may be performed under much more favorable conditions on the infant than on the adult. In the former the laminæ may be easily resected, the fatty tissue around the dura mater is much less vascular, and the periosteum, which can be readily detached from the bone, is capable of throwing out fresh osseous structure and of repairing the breach made during the operation in the posterior wall of the canal.—*British Medical Journal*, June 1, 1895.

SUTURE OF THE HEART.

Del Vecchio (*Rif. Med.*, April 4 and 5, 1895), as the result of experiments on dogs, concludes that suture of the heart in case of wound is possible. At the recent Congress in Rome (1894) he showed a dog whose left ventricle had been wounded in two places (one penetrating into the ventricular cavity) forty days previously. The author had sutured the two wounds with catgut and silk, and the dog appeared at the time of exhibition to be in perfect health; it was killed on the forty-second day after suture. The apex of the heart was found firmly adherent to the thoracic parietes.

Both wounds were firmly healed, and in one the scar could be seen on the endocardium, proving the penetration. An interrupted suture was found to answer better than a double continuous suture, as necrosis generally followed the use of the latter. Dogs present a special difficulty in these experiments, inasmuch as one has to open the pleural cavity to reach the heart. In cases of wound of the human heart, Del Vecchio proposes the following operative procedure: Two longitudinal incisions to be made from the lower border of the third rib to the upper border of the seventh, the one along the margin of the sternum, the other five to ten millimetres inside the nipple line; these incisions to be joined by a horizontal one made in the fourth intercostal space. The fourth, fifth, and sixth ribs and cartilages to be divided, and the outer cutaneous flaps turned up. The pleura to be separated and pushed on one side with the finger, exposing the pericardium, which is incised longitudinally. The wound is then united by interrupted sutures. Death in case of wound of the heart seems to be chiefly due to pressure from the blood effused into the pericardial sac. Since this pressure is also a check to further hemorrhage, it is a nice question whether operative interference may not do more harm than good, so far as the hemorrhage is concerned. Paracentesis may, however, be practised, to be followed, if necessary, by free incision of the pericardium. A short bibliography of the subject is appended. Fischer collected three hundred and seventy-six cases of heart wound, with a mortality (two to three minutes after injury) of twenty per cent. Death has been noted in periods varying from a few seconds to nine months after the injury.—*British Medical Journal*, June 1, 1895.

JANET'S TREATMENT OF GONORRHŒA.

EKELUND (*Archiv für Dermatologie und Syphilis*, Bd. xxxi., Heft 3) contributes the results of clinical trial of Janet's method of treating gonorrhœa. Briefly, this consisted in copious irrigations with solutions of potassium permanganate. More than a quart was not used at one time. At the first irrigation a strength of 1 to 4000 was employed. This was gradually increased until the solution averaged 1 to 1000. Daily microscopic examinations of the secretions were made. In typical cases immediately after the irrigation the urethra and mucous membrane is red and dry. For some time there is a clear serous discharge, the mucous membrane becoming slightly œdematous. This serous discharge increases in quantity, becomes slightly red-brownish in color, and gradually reassumes its former purulent character. This indicates that the reaction period is past and that it is time for another irrigation. During the treatment the purulent secretion gradually disappears, being replaced by a mucous or serous discharge. Microscopic examination shows that the pus-cells diminish in number, being replaced by mucus, the shreds being made up mainly of mucus and epithelium. Finally, the discharge stains very badly and shows very few scattered pus and epithelial cells. Gonococci disappear sometimes at once and sometimes after a very few weeks. In other cases they gradually disappear, losing their characteristic grouping and distinct color reaction. Micro-organisms are seen singly or as groups made up of very few individuals, not readily recognized without very careful and elaborate staining. These forms are evidently the involution or degeneration forms of gonococci. Even though the first irrigations be followed by increased discharge, if the secretion exhibits the characteristics thus described, the prognosis is favorable. This treatment should be intermitted only during the acute stages of complications, such as prostatitis, seminal vesiculitis, and epididymitis.

Ekelund believes that this method is only indicated when gonococci are present. A non-virulent urethritis not accompanied by gonococci yields more kindly to other methods of treatment. The prognosis is better in subacute and chronic cases, though the acute also respond well, especially when the disease has extended to the posterior urethra. Cystitis is considered a contraindication to this method of treatment. Indeed, this condition may be evoked by using strong solutions.

Fürst reported thirty-three cases treated by the permanganate irrigations with the idea of aborting. He states that only exceptionally was he able to cure in two weeks, and mostly a much longer time is required. After using the treatment he mentions dangerous complications, such as pus infiltration of the spongy body, periurethral abscess, prostatic abscesses, and prostatitis. He therefore strongly advises against a trial of the method. This author has not, however, indicated clearly his application, and his unfortunate results may have been due to imperfect technique.

Ekelund states that if the reaction of the mucous membrane of the bladder is carefully watched, if the strength of the solution is very gradually increased, and if the force employed in injection is properly moderated, dangers of

complications are no greater than those incident to the ordinary method of injection. It is true that symptoms of irritation of the bladder frequently occur. The patient complains of some tenesmus and has to urinate often. This lasts more than an hour or two, and is due to too strong solution, or when there has been previous inflammation of the bladder. In ambulatory practice these symptoms should indicate immediate weakening of the injection, and if they persist, temporary cessation of treatment.

The author reports one hundred and twenty-five cases treated by this method, many of them complicated by epididymitis, and shows by his results that this treatment is one which greatly shortens the course of subacute and chronic gonorrhœa.

PROPHYLAXIS IN SURGERY.

Under the above title, BROOME discusses, in the *Journal of the American Medical Association*, vol. xxv., No. 4, 1895, the subjects of prophylaxis of infection in operative surgery, and the consequences of unnatural adhesions or the amalgamation of different structures as they relate to amputations, which, in the author's opinion, are responsible for more or less suffering. To secure the best results the author advises the following steps:

1. Purification of the instruments, the disinfection of the hands of the operator and of the entire limb of the patient.

2. The production of artificial anæmia by elevating the limb and by the application of the constrictor several inches above the point at which it is proposed to amputate.

3. Fashion a long anterior flap by extending the incision down to the sheaths of the muscles and tendons. The entire flap is reflected by dissecting closely to the muscle and tendon, a short posterior flap is reflected backward by a like dissection, when the muscles are severed by a clean circular sweep of the knife down to the bone.

4. About one inch of the periosteum is then exposed below the point at which it is proposed to saw the bone. The periosteum now being incised is reflected upward, after the fashion of a cuff.

5. The soft parts are now to be retracted by an assistant by means of iodoform gauze. The bone is then sawed at an oblique angle for about a quarter of its thickness, when the saw is withdrawn and placed at a right angle with the shaft of the bone, and the bone is sawed off.

6. The end of the bone is now carefully trimmed and rounded, the periosteum brought down accurately over the sawed surface of the bone and carefully sutured by means of a small needle armed with very fine, perfectly sterilized silk.

7. The sheaths of the artery and vein are carefully dissected up, these vessels exposed, the artery first ligated, then the vein ligated separately, after which a single ligature is thrown around both and tied. The sheaths with the attached connective tissues are then carefully sutured over the ends of these vessels by the same means as were employed in covering the bone.

8. The nerve is now dissected from its connective tissue attachments and exposed for two and a half inches above the divided muscle, then cut off by means of blunt-pointed scissors. The sheaths and remaining connective tissues are brought over the ends of the divided muscles and sutured in a similar way to that adopted in covering bone and vessels.

9. A large compress of iodoform gauze is now folded tightly against the stump, and the skin-flaps brought down over the gauze and held firmly and forcibly against the stump in both hands of the operator, when, after the lapse of four or five minutes, the constrictor is quickly removed. After the expiration of several minutes more, the operator's hands are relaxed, the iodoform gauze tamponade is removed, and the stump carefully inspected, when, if all hemorrhage has ceased and the conditions are favorable for rapid and uninterrupted repair, the flaps are carefully and accurately sutured by means of medium-sized, perfectly sterilized silkworm-gut.

10. The wound is now dusted with powdered iodoform and several layers of iodoform gauze brought in contact with the stump; then over this, and including the entire leg, is placed a heavy layer of absorbent cotton. This is held in position by means of a neatly applied roller bandage.

11. The limb is placed upon a well-padded posterior splint and another roller made to include this splint and limb.

12. The patient is then put to bed and the limb kept elevated at an angle of about forty-five degrees.

The salient ideas of this paper may be formulated in the following conclusions, viz.:

1. The value of prophylaxis in operative surgery, as it relates to the formation of the flap and the apposition of homologous tissues, is not apparently fully appreciated by surgeons.

2. In order to derive the greatest benefit from the prophylaxis of infection and the unnatural union of tissue, a flap should be so fashioned in all operations as to carry the cicatrix of the skin away from the incision wound through the underlying structures, and each tissue brought in apposition with its own kind.

3. The particular point at which an amputation is made is not so important, with reference to the adaptability of the stump to prosthetic apparatus, as is the execution of the proper technique of the operation.

4. The artificial limb makers appear to be able to adjust artificial limbs to a great variety of stumps and at the same time afford the patient every facility of easy and perfect locomotion by the use of any compensating appliance manufactured, provided the operative procedure outlined in this paper has been completely executed.

5. The flap should be reflected, with subsequent suturing of homologous tissues, in operations upon all parts of the body, under the same general principles as are above described of amputations, including herniotomy, suprapubic cystotomy, celiotomy, gastrotomy, cholecystotomy, nephrotomy, etc.

6. If a wound is made and the operation completed in the manner outlined, through unbroken skin, and not in the vicinity of, or in communication with, some mucous canal, and suppuration takes place, it indicates that the surgeon has certainly committed some avoidable error in his methods.

7. Drainage is never necessary, following an operation conducted in this way through unbroken skin and into an area free from infection. All such wounds should be tightly closed without drainage, for if the surgeon's aseptic measures are perfect there can be no necessity for drainage.

8. In the light of Muttman's investigations we may draw the inference that the drainage-tube exposes the patient, at the deep end of the tube, to seventy-eight different species of cutaneous bacteria, and Welsh has shown clearly that one pyogenic variety is resident in the epidermis normally, and occupies such a position as to render it safe from any known means of cutaneous disinfection, but is prone to travel down along the sides of a drainage-tube, and in this way cause the wound to suppurate.

9. Blood in a wound is not dangerous, and where, for the obliteration of cavities therein, the choice lies between a blood-clot and the introduction of a drainage-tube, which is not only a foreign substance, but a prolific cause of infection, it is safer to take the chances with the blood-clot.

10. Blood furnishes bactericidal properties, and experiments made by three gentlemen of this city, who have become justly distinguished in their respective branches (I mean Welsh, Howard, and Halstead), show that virulent pyogenic staphylococci, injected into blood-clots which have been allowed to fill wound cavities, did not multiply and occasioned no suppuration. Irritation of an aseptic wound should never be employed, and the irritation of such a wound with chemical antiseptics can only be contemplated as a coarse and unscientific practice.

11. Iodoform is the ideal antiseptic powder for dusting the line of union of a sutured wound, despite all that has been said against it. It must be conceded that no equivalent for iodoform as a prophylactic in surgery has been found.

12. The chief aims which the surgeon should try to achieve are: the rapid and undisturbed healing of wounds, the prevention of deformities and the resulting suffering of the patient, which cause many to become the victims of evil and vicious habits, and the prolongation of human life and usefulness. For the attainment of these ends the science of prophylaxis demands prominence and careful consideration in the practice of surgery.

UMBILICAL HERNIA OF THE NEW-BORN AND INFANTS.

CAHIER, in an elaborate study of this subject (*Revue de Chirurgie*, No. 4, 1895), says,—

1. In the children of either the rich or the poor the cure of umbilical hernia by truss must be tried up to the age of eighteen months or two years, unless there be certain exceptional contraindications.

2. In these young patients the use of the conical pad and the elastic spring is to be avoided. A hemispherical hard-rubber pad, supported on a metal plate and held in place by a bandage, is the best appliance. The apparatus should be changed every eight or ten days.

3. In children two to seven years of age, belonging to well-to-do families, who are carefully looked after, an attempt may still be made to cure the hernia by bandage.

4. Children of the same age, whose parents are poor, and consequently unable to give the necessary care to the child, or if they are negligent or ignorant, should not be sub-

jected to this treatment if there is any tendency for the hernia to increase or to give trouble.

5. The umbilical hernias which persist after the seventh year, in spite of the careful use of the bandage, may be treated by other measures.

The following cases should be subjected to operation:

1. Umbilical hernias of the new-born, if strangulation occurs, or if persistent gastro-intestinal troubles are induced which seem to depend upon the hernia.

2. The hernias in children of from two to seven years present analogous indications.

3. Children of this age, belonging to poor families, who do not receive proper attention, if at the end of a year or eighteen months the hernia is still of the same size.

4. Hernias that persist after the seventh year, that are rebellious to treatment and tend to increase in size.

5. If the skin covering the hernia is inflamed or ulcerated.

6. If the hernia interferes with the occupation that the person has selected.

7. Umbilical hernias with a large ring.

8. Those that are subject to strangulation or inflammatory accidents.

9. Those that cause pain and gastro-intestinal disorders, and consequently interfere with the development of the child.

DISASTROUS RESULTS FOLLOWING WHITEHEAD'S OPERATION FOR PILES.

ANDREWS (*Columbus Medical Journal*, vol. xv., No. 3, 1895) has secured the opinion of a large number of surgeons, both in this country and Europe, in regard to the disastrous results that are apt to follow Whitehead's operation. The replies include two hundred cases, of which the following is a summary:

Loss of the special sense by which the patient should be warned of a coming evacuation and enabled to prepare for it, eight cases; incontinence of flatus and fæces, twenty-three cases; paralysis of the sphincter, four cases; chronic inflammation of the rectum, one case; failure of union of the wound by first intention, with retraction of the edges of the wound forming a contracting tubular ulcer with stricture, nine cases; other ulcers, two cases; irritable and painful anus, twelve cases; eversion of the mucous membrane, four cases; neuralgia of the pelvis and inferior extremities, two cases; general neurasthenia, one case; fatal peritonitis, one case; non-fatal septic results, five cases; fistula in ano, one case; reported as having bad results without accurate description, one hundred and twenty-seven cases; total, two hundred.

MASSAGE IN SPRAINS, BRUISES, AND DISLOCATIONS.

DOUGLAS GRAHAM, of Boston, reiterates his belief in the efficacy of massage in these cases (*Edinburgh Medical Journal*, August, 1895). In beginning the rubbing, in a recent case, the injured parts should be approached gradually, after first rubbing at some distance on the healthy tissues. The first step consists of gentle stroking or effleurage. The second step consists in kneading the part. At the end of fifteen or twenty minutes' rubbing, gentle, firm pressure can be made over the swollen and recently tender parts, when the rubbing may be given a circular motion, with the greatest push upward. If this is done with sufficient tact, it will probably be agreeable to the patient rather than painful. At the conclusion of the rubbing a well-fitting bandage is applied. This should be repeated twice daily. It is claimed that such injuries treated in this way get well in one-third of the time that similar cases do under the usual method of rest and fixation, and with less tendency to subsequent weakness, pain, and stiffness. The author says, "Experience teaches that the sooner after a sprain massage is begun the quicker is the recovery."

ENTERECTOMY FOR CARCINOMA OF THE TRANSVERSE COLON BY MAUNSELL'S METHOD.

ROSE records a successful case of enterectomy and suture by Maunsell's method in the *Practitioner*, vol. lv., No. 11, 1895. The patient complained of pain, flatulence, the appearance of a hard swelling to the left of the umbilicus, loss of appetite, dyspepsia, and constipation. At the operation the bowel was occluded above and below the tumor by Makins's rubber-covered clamps. This was followed by excision of the mass, together with a V-shaped portion of the meso-colon. The operation lasted an hour and twenty minutes. The patient was considerably shocked. At the end of fourteen hours small quantities of peptonized milk were administered. The patient made a good recovery and left the hospital one month after operation. The author was impressed with the usefulness of this method of operating. The material best adapted for the stitches is said to be the chromicized catgut.

HARELIP.

HEATH, in a lecture on this subject (*Practitioner*, vol. lv., No. 11, 1895), states that the best time for operating, in the absence of some special indication, is about the sixth week. The operation which he advises is to pare one side of the lip freely and to cut a flap from the other side of the lip and transfer it to the opposite side. It is usually most convenient to take the flap from the longer side. The author prefers fine, dry, chromicized catgut sutures, applied closely. By means of one of the sutures, which is left long, the lip is inverted, and two or three stitches introduced to bring the mucous membrane together. A piece of adhesive plaster is used to draw the cheeks together to relieve the sutures from tension. As it is desirable to avoid crying, the writer directs that the child be nursed assiduously and that minute doses of opium be given at intervals. During the process of healing it is recommended to feed the child with a spoon.

In the cases of double harelip with projection of the intermaxillary bone, the author strongly recommends that the latter should be cut away. In cases in which it has been left, he has seen it remain loose and troublesome, and in two instances he has been called upon to remove it later in life.

ULCERATION OF THE RECTUM.

Under this title, FRAENKEL relates, in the *Münchener Medicinische Wochenschrift*, June, 1895, his experience in this condition, which includes nine cases, all of which occurred in women. The ulceration usually occurs at a distance greater than three or four centimetres from the anus, especially in the early stages. The appearances are characteristic. The mucous membrane is usually wanting about the whole circumference of the bowel, which exposes the submucous or even the muscular coat. The base of the ulcer is smooth; there are no nodules or other characteristic structures in the ulcer itself or around the edge, which is usually sharply defined. There is considerable narrowing, with loss of elasticity. Occasionally one or more perforations may be present, which may lead to suppuration in the perirectal tissues; healing leaves dense scars. These lesions are frequently mistaken for syphilitic manifestations. In regard to treatment, the author says that he has never seen complete healing. He believes that extirpation of the diseased portion of the bowel, as performed by Sick and Schede, is the only satisfactory treatment.

CONTRIBUTION TO THE TREATMENT OF SUPERFICIAL SYPHILITIC ADHESION BETWEEN THE SOFT PALATE AND THE WALL OF THE PHARYNX.

LIEVEN describes the following method of operation in cases in which syphilitic lesions of the throat have been followed by adhesion between the soft palate and the wall of the pharynx (*Münchener Medicinische Wochenschrift*, No. 21, 1895). After cutting the palate free, as well as all bands of adhesion, the posterior nares is powdered with europhen and packed with europhen gauze for ten days, Then a rubber bag, like a colpeurynter, is introduced for several hours, daily at first, and later less frequently. The bag is put in position by attaching the tube to a soft catheter, which is passed through the nose into the throat. When in position the bag is distended with air.

In very old cases of extensive destruction of the posterior wall of the pharynx and wasting of the pharyngeal muscles and those of the palate, it would be better not to operate, as it can benefit the patient but little.

SPLENECTOMY FOR SPLENIC HYDATID.

HAHN reports (*Deutsche Medicinische Wochenschrift*, July 11, 1895) the case of a woman, aged thirty-five years, who noticed a swelling in the abdomen. On examination, the swelling was found to be fluctuating, and a movable tumor was found on the left side. An operation was performed, and the tumor found to involve a spleen, which, from the appearances, it was thought best to remove entirely. The large vessels of the pedicle were ligated separately and divided. Examination of the tumor proved it to be a hydatid. The blood at the time of the examination showed an increase in the number of white blood-cells, which gradually lessened and assumed a normal proportion four weeks after the operation. Recovery was complete. The author refers to seven cases of this affection treated by splenectomy, of which five recovered. If the removal of the tumor is prevented by firm adhesions, the wall may be stitched to the abdominal incision and incised either immediately or at a second sitting. The author warns against tapping, owing to the high mortality. The author states that the removal of the spleen, made necessary by injury or cyst formation, is without any real disadvantage to the individual, although it may be dangerous in certain diseased conditions, as leukæmia.

A CASE OF SPINA BIFIDA CURED BY EXCISION.

BALDWIN reports a successful case of excision of a spina bifida, in the *British Medical Journal*, No. 1804, 1895. The child was two months of age and the tumor nearly as large as a cocoa-nut. As tapping had failed to relieve the condition, the operation was undertaken. Both the sac-wall and the skin were tied with silkworm-gut sutures. Excepting some fever on the second day and paralysis of the bladder extending over three days, the child made an excellent recovery.

ACQUIRED SUBLUXATION OF THE KNEE-JOINT IN YOUNG CHILDREN.

ROBINSON reports in the *British Medical Journal*, No. 1804, 1895, three cases of the above condition. Two of the patients were nine months of age and the third was one year. In each case considerable abnormal lateral displacement of the knee-joints was observed, together with a general flaccidity of the muscles of the legs and laxity of the ligaments.

The treatment consisted in the internal administration of suitable tonics and remedies to improve the general health, and in rubbing the leg muscles to increase their bulk and tone. The patients all recovered.

THE TREATMENT OF MALIGNANT TUMORS WITH THE TOXINS OF THE STREPTOCOCCUS OF ERYSIPELAS.

SENN, after a brief review of this subject, relates his experience in the *Journal of the American Medical Association*, vol. xxv., No. 24, 1895. Nine cases are reported, of which six were sarcomata and three carcinomata. The author says that in these cases, after fair trial, the treatment resulted uniformly in failure. The remedy failed to effect even a temporary improvement.

In the discussion which followed the reading of this paper, DR. COLEY stated that since May, 1891, he has treated eighty-four cases of inoperable malignant tumors with the toxins of erysipelas and the bacillus prodigiosus. Of forty-three cases of sarcoma so treated, eleven were successful. One patient has remained well for nearly four years, two for more than two years, and two for one and a half years. One has had a recurrence.

LIGATURE OF THE INNOMINATE ARTERY.

BURRELL reports a case of ligature of the innominate artery, in the *Boston Medical and Surgical Journal*, vol. cxxxiii., No. 6. He has been able to collect twenty-nine cases, including his own, of which twenty-six were performed for aneurisms of the subclavian artery, generally involving the junction of the carotid and innominate arteries, and three for trauma. Of the latter, one was for hemorrhage from the subclavian, one for hemorrhage of the axillary, and one for secondary hemorrhage following ligature of the subclavian. Three of the cases are reported as having recovered. The author's case lived one hundred and four days and died of hypertrophy with dilatation of the heart. The author believes that the success of this operation should be measured by the question whether the patient's life is prolonged and made more comfortable than without operation. On this basis he classes his case as among those having recovered, but followed by death from other causes. The operation was performed for aneurism, and was carried out as follows: an incision was made from the level of the cricoid cartilage along the anterior border of the sterno-mastoid muscle to two inches below the upper border of the sternum. From this point another incision extended outward four inches in length to the junction of the outer and middle thirds of the clavicle. This flap was turned back and the sterno-mastoid, thyroid, and hyoid and omo-hyoid muscles were divided. This exposed the aneurism, which involved the right carotid and the right subclavian, extending down to and on the innominate. By means of the half-inch trephine and the bone forceps, the right sterno-clavicular articulation was removed. This gave a very satisfactory exposure of the artery and the important vessels and nerves in relation with it. After opening the sheath and isolating the vessel, a silk ligature was passed by means of an aneurism-needle guided by a copper spatula, which had been made to encircle the vessel previously. A square knot was tied, as it was feared that the extra turn of the surgeon's knot might tear the vessel. Three minutes were taken in tightening the first ligature, during which the coats of the vessel could he felt to give way. This ligature was placed three-quarters of an inch from the aorta; a second ligature less tightly drawn was placed half an inch higher up. The overlying muscles were then sutured in their original positions and the wound closed; the operation lasted an hour and a half. The right arm was wrapped in

cotton wadding. After the operation it was noted that the right pupil was more dilated than the left and reacted more slowly to light. There was relative anæmia of the right tympanic membrane. There was but little shock and not much pain was complained of.

The article concludes by a description of the autopsy, with a special reference to the aneurism, a list of the operations so far performed, and reference to the literature of the subject.

A MODIFICATION OF THE OPERATION OF PYLOROPLASTY.

ROBSON describes a modification of the operation of pyloroplasty in the *British Medical Journal*, No. 1803, 1895. He expresses a decided preference for this operation, as compared with that advised by Loreta.

The modification consists in the use of a bone bobbin, which expedites the procedure and, in the author's judgment, renders the operation safer than suture alone. After making the usual incision, the bobbin is introduced and the mucous and serous coats united separately by a continuous suture. The bone tube secures an immediate and thoroughly patent channel, and affords protection to the line of sutures for from twenty-four to forty-eight hours, when union should be well established. He refers to three cases in which this operation was successfully performed.

CŒLIOTOMY FOR VOLVULUS OF THE SIGMOID IN A MAN AGED EIGHTY-FIVE; INTESTINAL DRAINAGE; RECOVERY.

The following case is reported by SMITH and FLEMING (*British Medical Journal*, No. 1803, 1895): There had been complete obstruction for a week, attended with the usual symptoms. A diagnosis of volvulus of the sigmoid flexure was made and an operation undertaken for its relief. In opening the abdomen the sigmoid was found to be enormously distended. A fold was brought out of the wound and incised, which allowed of the escape of large quantities of gas. The involved portion of the bowel was brought out of the wound, when one complete twist was manifest. It was deemed best to drain the bowel for a few days, which was accomplished as follows: a piece of rubber tubing about two feet in length and of the calibre of a crow-quill was stretched over the point of a probe and introduced into the small opening which had been made to allow the gas to escape. Then a safety-pin was made to transfix the peritoneal and muscular coat of the bowel by the side of the tube and to pass through the side of the rubber tubing.

As a means of getting the patient well, intestinal drainage, as an accessory to the operative treatment of these cases, is scarcely inferior to the removal of the cause of the obstruction. The patient made an excellent recovery.

GASTRIC ULCER TREATED BY LORETA'S OPERATION.

PODRES (*Centralblatt für Chirurgie*, No. 15, 1895) states that in cases of cicatricial affections of the pylorus, particularly if there are extensive adhesions, better results are attained by this operation than by gastro-enterostomy. He reports the case of a man, aged thirty-four, who had complained of sharp pain in the region of the pylorus and vomiting after meals. Abdominal section showed that the pylorus and duodenum were surrounded by dense adhesions. The front wall of the stomach was incised and a circular ulcer discovered, the base of which occupied a portion of the pylorus and of the smaller curvature, in addition to an extensive cicatricial contraction about the pylorus, so that only the tip of a pair of dressing forceps could be passed into the duodenal opening. This opening was stretched gradually and the base of the ulcer scraped with the nail and a sharp spoon, after which the incision was closed with Lembert's sutures. The patient made a good recovery, his previous symptoms disappeared, and he remained well five months after the operation.

AN ORIGINAL OSTEOPLASTIC OPERATION FOR THE REMOVAL OF LARGE VASCULAR TUMORS GROWING IN THE VAULT OF THE PHARYNX, ANTRUM OF HIGHMORE, SPHENO-MAXILLARY, AND PTERYGO-MAXILLARY FISSURES.

WYETH describes the following case (*Journal of the American Medical Association*, vol. xxv., No. 5, 1895): Man, aged eighteen years, complained of difficulty in breathing through the nose in December, 1892. In March, 1893, he suffered from severe pain in the head and the general health was impaired. A growth was discovered in the naso-pharynx, which was supposed to be a polyp. In June, 1894, this was removed, with much relief to the patient. During the next month the cheek began to swell

and protrude, and the left eye was prominent. By November the course of the growth had become quite rapid. When the patient came under the author's care it was evident that the only course which offered any relief was to remove the tumor, which, beginning in the nasopharynx, had involved the antrum of Highmore. Although the patient's condition was so very unsatisfactory, the operation was undertaken. It is described as follows: the incision was begun over the temporal arch, two inches behind the outer angle of the orbit, and followed the arch to the edge of the orbital cavity, then along the frontal process of the malar bone, curving parallel with it and one-eighth of an inch from the margin of the orbit until the infraorbital foramen was reached, then continued downward to the level of the ala nasi and outward through the cheek until the point of the knife was in the vicinity of the opening of Steno's duct. After the hemorrhage had been arrested, a key-hole saw was passed into the anterior commissure of the spheno-maxillary fissure, with the teeth turned up, and the junction of the malar with the frontal bone rapidly divided. Beginning at the same point, with the teeth turned downward, the floor of the orbit was sawed through, traversing the infraorbital foramen; a quick, sharp jerk by means of a hook fractured the zygomatic process and permitted the flap to be displaced, exposing the parts in a satisfactory manner. The hemorrhage was tremendous, but was controlled by packing sponges into the wound. The tumor was then removed by means of the elevator and the antrum packed with gauze. The osteoplastic flap was replaced and secured by stitching the soft parts. The patient made an uninterrupted recovery.

The sudden severe hemorrhage referred to had the effect of increasing the pulse-rate from 80 or 85 to 140. The intravenous injection of a pint of normal salt solution decreased the frequency to 85 beats and apparently saved the patient's life. The author concludes with a reference to three points which the case brings up. The first of these is the combination of morphine and chloroform, or morphine and ether anæsthesia, the former of which was employed in this case. The amount of chloroform required was only two drachms. The second point refers to the value of transfusion with salt solution. Five pints were used during the course of the operation, the blood becoming so thin that practically salt water ran from the vessels in the line of incision, and yet the pulse was maintained at from 80 to 90 beats to the minute and was full and strong. The last point was the persistence of motion in the orbicular muscle of the lids after division of the branches of the seventh nerve.

IMMEDIATE SUTURE OF THE GALL-DUCTS AND GALL-BLADDER AFTER EXTRACTION OF STONES.

ELLIOTT holds that incision of the ducts or the gall-bladder, followed by immediate suture, is the proper operation in the majority of cases, especially in those which are recent. The author has operated by this method successfully on the hepatic duct once, the common duct once, and the gall-bladder three times. Twenty-eight cases have been collected in all, with a mortality of eighteen per cent.

In performing the operation the patient is hung by straps under the arms on an inclined plane at an angle a little less than forty-five degrees, with a sand-bag under the back. The abdomen is opened in the right linea semilunaris. The gall-bladder is seized and pulled up, and the course of the ducts palpated with great care. When the stone is found, it is grasped between the thumb and finger of the left hand and brought into as convenient a position for extraction as possible. The thumb and fingers are not removed until the sutures are tied. A longitudinal incision is made over the stone and the stitches introduced, after which the stone is removed and the stitches tied. The fingers may compress the duct above to prevent the flow of bile. Two rows of sutures are employed, catgut being used for the duct and silk for the overlying peritoneum.

The author's conclusions are as follows:

1. Every operation should be performed with the idea of restoring the functions of the ducts, and that any irreparable injury to them is a serious calamity.

2. Immediate closure of the gall-bladder is safe if the ducts are clear and its walls healthy.

3. Incision and suture of the cystic duct is preferable to prolonged manipulation.

4. Incision and suture of the hepatic and common ducts is the operation of choice for impacted stones.

5. The mortality of this operation is less than eighteen per cent.

6. If the condition of the patient is critical, a preliminary cholecystotomy is advisable.

7. Cholecystenterostomy should be reserved for irremediable stenosis of the common duct.

Correspondence.

THE TREATMENT OF DIFFICULT LABOR.

To the Editors of the THERAPEUTIC GAZETTE:

DEAR SIRS:—In the year 1880 I was called to attend a negro woman in labor in Gainesville, Texas. From subsequent information I learned that she had been in labor several days: three, maybe four, days. At any rate, she was tormented with weak, frequent, and inefficient pains. Upon examination, I found the right arm and hand protruding from the vagina, the ribs in the superior strait, and the head in the left iliac region. I sent for assistance, and in the mean time tried to restore the arm and hand to the uterine cavity, and succeeded in replacing it upward, I think, in front. Assistance then arriving, in the person of an old college classmate (Dr. Harris), I applied the forceps to the child's head and delivered rapidly, on account of the shock and hemorrhage. The depression continuing, we examined, and found the cause to be a rupture of the uterus. We administered stimulants and remained until she died, an hour afterwards. The child never breathed or showed any signs of life.

In 1884, at Savanna, Indian Territory, I was again confronted with a shoulder presentation, but by pushing the shoulder backward and to the right, and pressing the head down from the left, I was able to convert it into a head presentation, and, retaining the head in position till the waters broke, safely delivered a living child.

My third case was in Denison, Texas. I was called in the morning to see a lewd woman, whom I had noticed on the street the day before. She was complaining of pains and backache, and said she had whites, but did not think was within three months of her time of confinement. On account of some abrasions on my hands, I did not make an examination at that time, but gave some viburnum, and told her that I would come in the afternoon, intending, in the mean time, to put some collodion on my abraded hands before making an examination; but when I reached my office I met a summons to attend court at Sherman, that I had forgotten; so, thinking there would be plenty of time, I went with the officer. When I got back to Denison I was met with an alarming story of the woman being without attendance, the head hanging out, and unable to deliver herself. Upon examination, I found that the cord presenting was the supposed head. My first diagnosis was a breech presentation, and after summoning assistance, in the person of Dr. De Bow, we gave chloroform and proceeded, first bringing down an arm in place of a knee, then another arm, then a foot; but all this time being unable to move the head and shoulder, which were to the left, the child's front being to the mother's front, the breech, of course, being on her right. After about two hours' work, I succeeded in moving the shoulder and head upward and bringing down both feet. Dr. De Bow delivered her in five or ten minutes more. The child was still-born and could not be made to breathe; the woman made a good recovery, in spite of bad surroundings.

My fourth case came on rapidly. I could feel the cord and a hand high up in the pelvis, but could not feel anything else to indicate the presentation. Assuming it to be the first position, I tried to move the head up and to the left and the breech down. The waters broke, and with them down came the arm and the cord. I at once sent for help, and, after administering chloroform, applied the forceps to the head and tried to deliver, being unable to replace the arm. I tried again to replace the arm, and this time success crowned my efforts, but I could not return the cord so that it would not again prolapse. We then brought down the head, and, after waiting an hour for the patient to rest and regain strength, we again applied the forceps and delivered a child weighing ten pounds, still-born; there was a slight rupture of the perineum and also of the neck of the uterus.

My next case was one in consultation. Pregnancy was advanced six months, right arm presented, head to the right, face forward. After a long time the head and shoulder were pushed up, the feet brought down, and delivery was accomplished.

The lessons taught me in these cases are:

1. Never to attempt a reduction without full anæsthesia and relaxation.

2. In high positions to make a diagnosis previous to the rupture of the waters, even if chloroform is required.

3. To make an examination, if necessary, with as little delay as possible on account of fear of infection.

4. Not to attempt delivery without a reduction of the displaced arm.

There is no use trying to bring down a knee or arm until the shoulder and head are moved out of the way.

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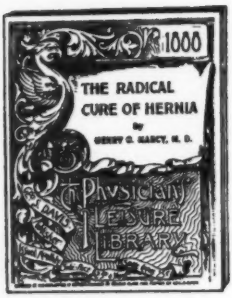

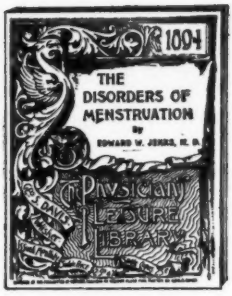

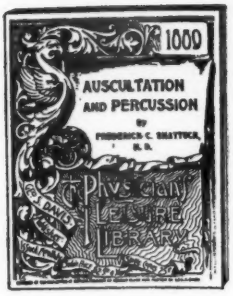

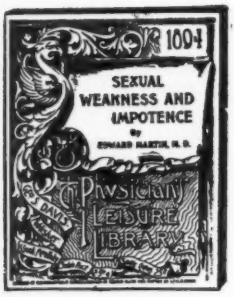

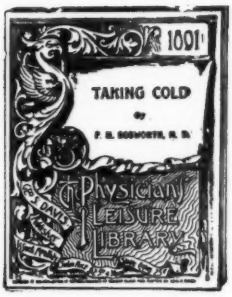

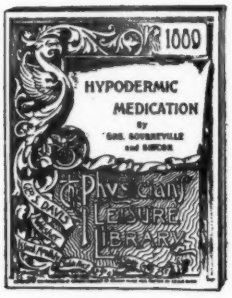

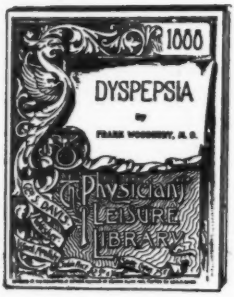

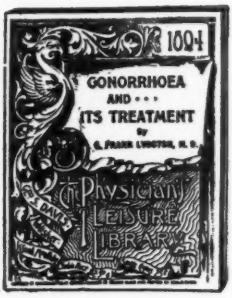

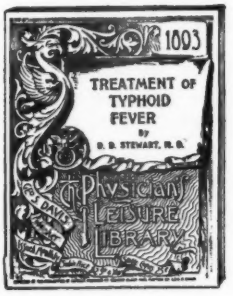

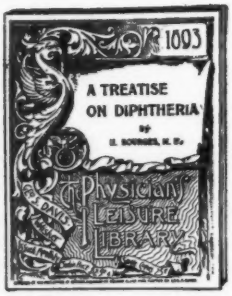

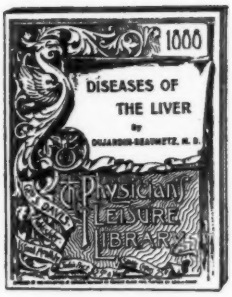

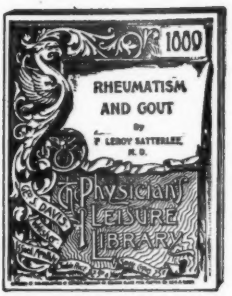

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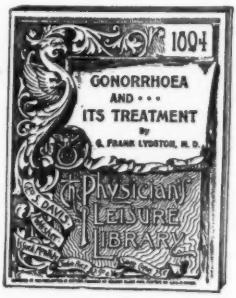

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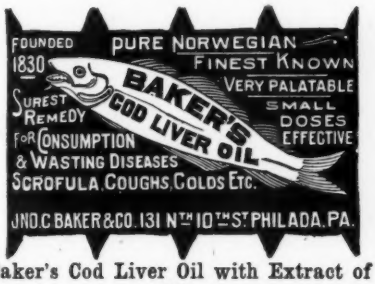
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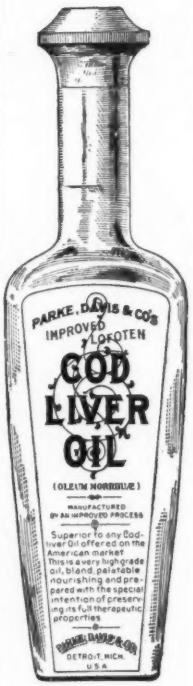
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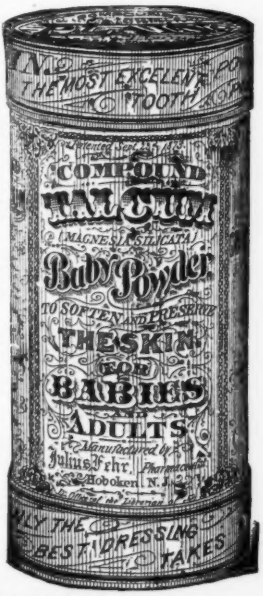

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